New Commodore Printer Review

C-64 Word-Game Challenge

The Home User's Guide to Commodore Computing

U.S.A. $2.95
CANADA $3.95
U.K. £2.20

RUN

March 1987 A CWC/I Publication

Digitize!

Capture Exciting Images On Your C-64

Print Your DataFile Mailing Labels & Reports

Electronic University Update

C-128 Hi-Res Print Utility

Cover the Spectrum

With PRISM SOFTWARE

Sixth Sense 128 $49.95

The spectrum of Prism expands to enhance your Commodore 128. With Sixth Sense 128 comprehensive modem control isn't a mission impossible.

Sixth Sense 128 is the most comprehensive modem control available. It operates based on the time of day, data received, internal counters or provided templates. Harness the explosive capabilities of Sixth Sense to do your next mission impossible.

- 800 line buffer/7,200 lines maximum with expanded RAM
- 20 active macros • Runs in 80 columns only
- 42 prewired command keys - 10 to wire your way!
- Line/screen editors • SEARCH/GOTO commands in buffer
- CompuServe "B" & XMODEM CRC/Checksum file transfer protocol

M5 Kernal $29.95

Yes, now you can use the M5 Kernal to investigate code on your software. Using the POKE and PEEK commands you can see it all...everything on a program disk, including the control characters.

With your own M5 Kernal you can privately investigate program controls. M5 Kernal requires $E000 ROM to be socketed. To use M5 Kernal fully, a reset switch is necessary.

See M5's tools of the trade:

- Control characters automatically shown in basic programs.
- Repeating keys.
- Buffer to capture incoming/outgoing commands.
- Starting and ending addresses in each load shown in HEX.
- Examines codes on turned screens.
- Restores RAM vectors before C64 loads.

M5, the investigator, can be yours!

Superkit Amiga $29.95

From the makers of the #1 disk utility package for the 64 comes Superkit Amiga! It contains a normal copier for fast duplication! Superkit Amiga also has a nibble copier for intelligent nibble duplication. Its index nibbler provides index hole protection duplication and handles the latest protection schemes.

Superkit Amiga also has an MFM disk editor. It has a super scan full disk error scanner and shows non-standard formats.

Also included are over 100 parameters to handle the real toughies! No user selection needed. Superkit Amiga will choose the correct parameter for you. Manual included for easy usage. Periodic updates on parameters will be available.

Superkit 1541 $29.95

version 2.0 by Marty Franz & Joe Peter

SINGLE NORMAL COPIER - Copies a disk with no errors in 1 minute. Corrects all disk errors.

DUAL NORMAL COPIER - Copies a disk in 33 seconds with a graphic/music display while working.

SINGLE NIBBLER - Nibble copies a protected disk in 1 minute.

DUAL NIBBLER - Nibbles a disk in 30 seconds and has a graphic/music display while working. It's capable of copying elongated headers, extra sectors and non-standard GCR.

FILE COPIER - Full screen display including buffer, starting track & sector, file being copied and revives deleted/corrupted files.

TRACK & SECTOR EDITOR - Capable of reading to track 40 and examines data under errors. Full editing capabilities in HEX, ASCII or text. An ML monitor is built-in.

GCR EDITOR - Allows examination of a disk in its raw format including the header, density, sync marks and non-standard GCR bytes. You can even examine a full track at a time. It's a great way to learn disk protection methods!

SUPER NIBBLER - The most powerful nibble available. It even detects and duplicates density changes automatically.

DISK SURGEON - This is what a parameter copier should be! It copies and places parameters on the disk. Now, over 400 parameters are included.

SUPER SCAN - Gives a video or printer display of errors and density on a disk in under 35 seconds.

SUPER DOS FAST LOADER - Loads 150 blocks in 10 seconds. It also includes an Auto-Boot maker.

All programs work with 1541/1571 single side drives made. All of the copiers are the fastest on the market and include directory options. The File Copier, Track & Sector Editor, Super Nibbler and Disk Surgeon use 1 or 2 drives and include device number change. All programs re-boot to main menu. SUPERKIT has an easy to use menu-driven operation! Version updates are $10. Parameter updates are $6.

Plus $3.00 Shipping/Handling Charge - $5.00 C.O.D. Charge
All of these programs come on a double-sided disk.

PRISM SOFTWARE

401 Lake Air Drive, Suite D Waco, Texas 76710
Orders/Tech Help (817) 751-0200
Dealers and distributors are welcome.
MASTERCARD & VISA ACCEPTED

SUPERKIT is for archival use only! We do not condone nor encourage piracy of any kind.

TO THE VICTOR GO THE SPOILS

Actual Atari ST screen!

Actual Apple IIGS screen!

Actual Macintosh screen!

Actual Commodore 64 screen!

"What an experience! Like being in a movie!"
Computer Entertainer, Dec. 1986

CINEMAWARE™

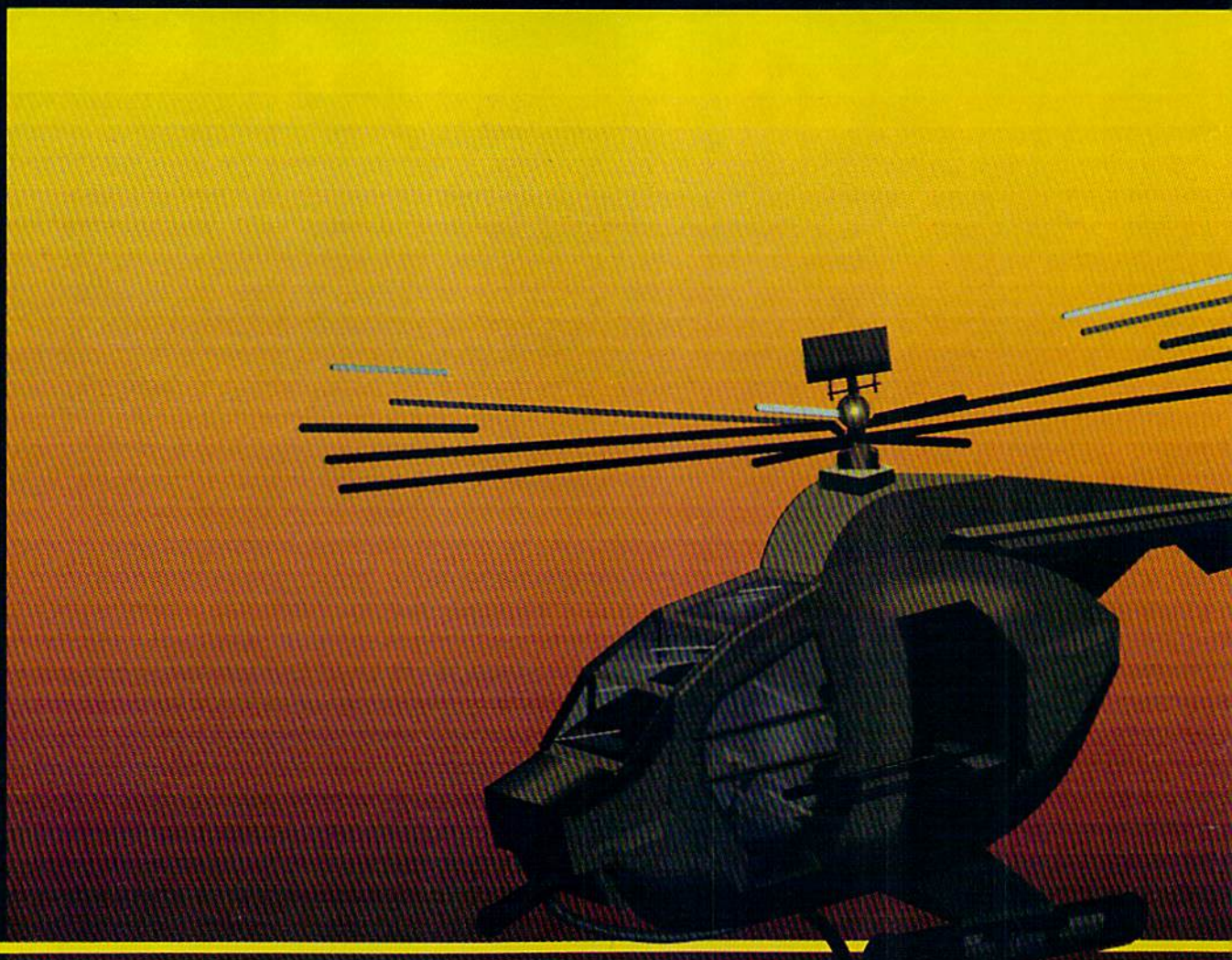
PRESENTS

DEFENDER OF THE CROWN

NOW PLAYING AT A SOFTWARE DEALER NEAR YOU

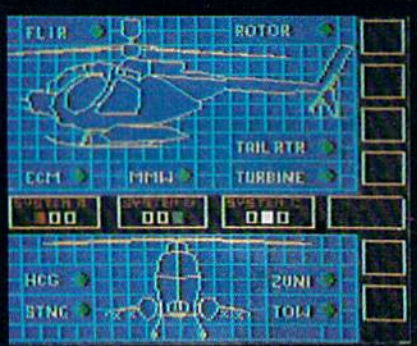
Exclusively distributed by Mindscape, 3444 Dundee Road Northbrook, IL 60062
Call Toll Free in Continental U.S. (Except IL): 1-800-443-7982 Illinois: 1-312-480-7667

COMMODORE, APPLE, MACINTOSH, ATARI AND IBM ARE REGISTERED TRADEMARKS OF COMMODORE ELECTRONICS, LTD., APPLE COMPUTER INC., ATARI INC. AND INTERNATIONAL BUSINESS MACHINES INC. RESPECTIVELY
CINEMAWARE IS A TRADEMARK OF MASTER DESIGNER SOFTWARE, INC.

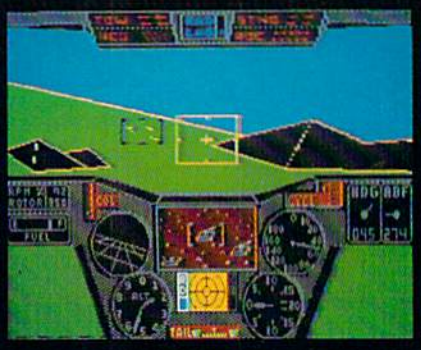


In a market full of helicopter simulations like Super Huey II, Gunship, and Infiltrator, it's nice to find a product like ThunderChopper that flies high above the rest!

Colonel Jack Rosenow USAF (Ret.), President of ActionSoft Corp., has the experience to provide all of the helicopter action and strategy you've been looking for! ThunderChopper incorporates the most advanced graphics, flight systems, and game-playing factors to provide a sensational balance of strategy and fun:

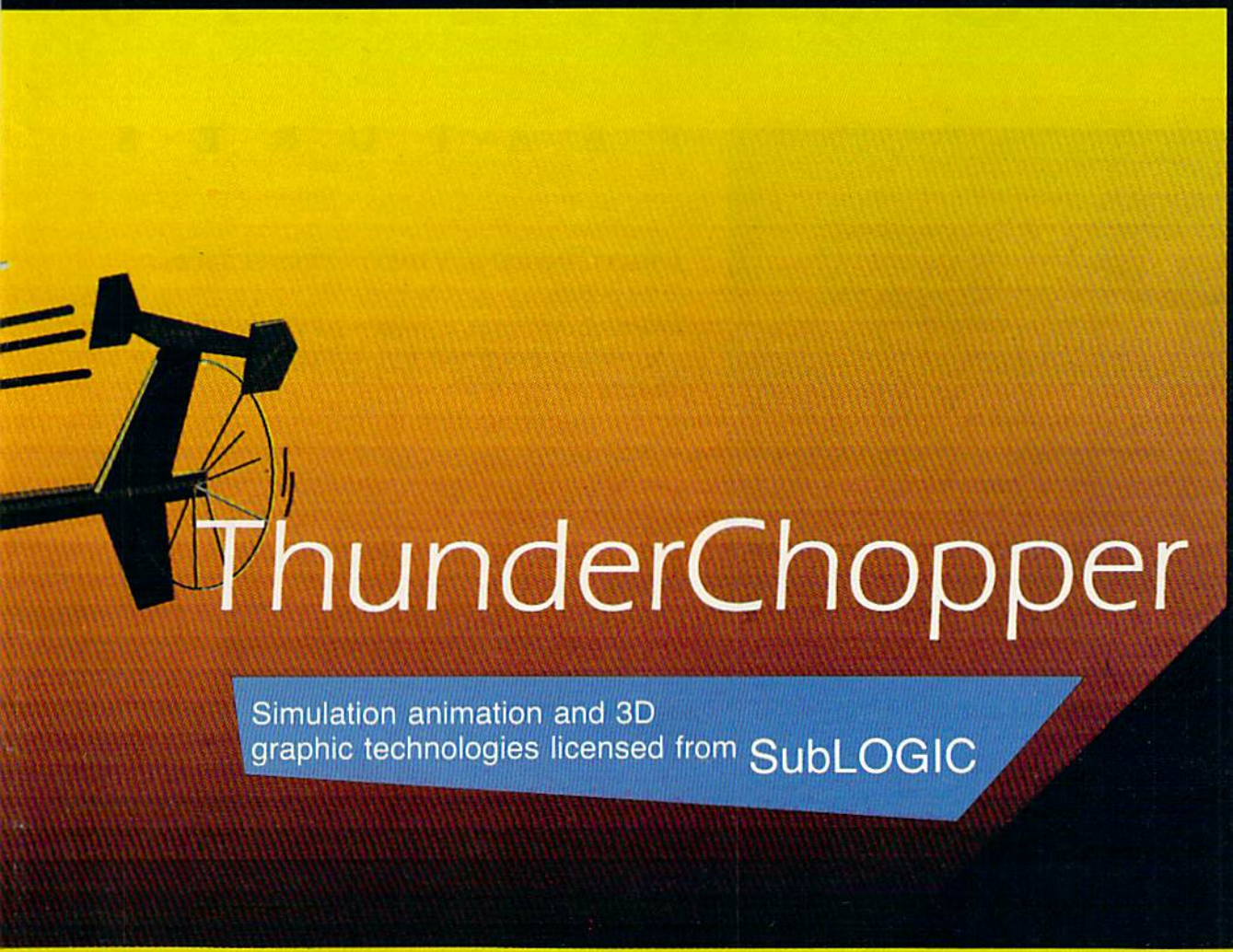


- Action-packed animated graphics include real 3D scenery and airborne threats. The competition's graphics just don't compare.
- A sophisticated instrument panel lets you scan all vital information at a glance whether performing combat, exploration or rescue operations. ThunderChopper's advanced instrumentation includes Forward-Looking Infra red, CO2 laser radar, zoom television, and ECM. Armament includes TOW and Stinger missiles, a Hughes Chain Gun, and Zuni rockets.
- Better program and documentation design gets you up flying exciting combat missions in minutes.



As Colonel Jack says: "ThunderChopper is the ultimate in helicopter action and realism. Nothing else even comes close. No other simulation can boast this much fun!"

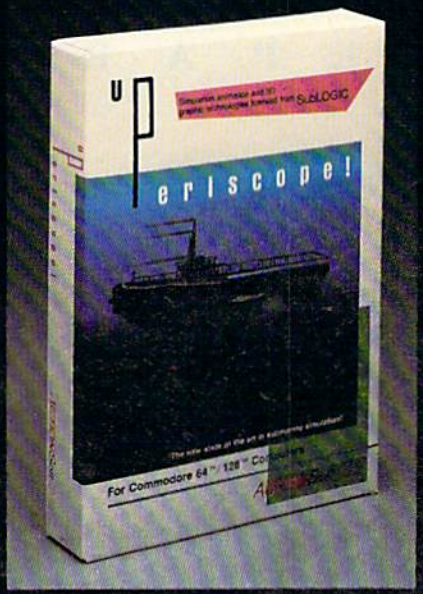
Circle 188 on Reader Service card.



Up Periscope!

The new state of the art in submarine simulation. The superior strategic play action and 3D animated graphics of this simulation put it generations ahead of the pack.

See Your Dealer...
Or write or call us for more information. ThunderChopper and Up Periscope! are available on disk for the Commodore 64/128, Apple II, and IBM PC line of personal computers for the suggested retail price of $29.95. For direct orders please specify which computer version you want. Include $2.00 for shipping and specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club cards accepted.



- $29.95 -
Better Engineering at a Better Price

© 1986 ActionSoft Corporation
3D Graphics and special effects courtesy SubLOGIC Corp.
Commodore 64 and Commodore 128 are trademarks of Commodore Electronics Ltd.
Apple II is a trademark of Apple Computer, Inc.
IBM is a registered trademark of International Business Machines Corp.

ACTIONSoft
GENERATIONS AHEAD IN STRATEGY ACTION SOFTWARE
122-4 S RACE ST URBANA, IL 61801
(217) 367-1024

Circle 188 on Reader Service card.

MARCH 1987
VOLUME 4, NUMBER 3

CONTENTS

COVER ILLUSTRATED
BY ROGER GOODE

FEATURES

DIGITIZING THE VIDEO CONNECTION
by Ervin Bobo **30**
Learn about three commercial video acquisition programs for digitizing images on the C-64.

***DFPRINT** *by Mike Konshak* **38**
This accessory to *RUN*'s popular Datafile database program for the C-64 gives you formatted mailing labels and reports based on Datafile files.

***PICK YOUR PS AND QS** *by Penny DeGroff* **44**
Have some fun expanding your vocabulary with this easy-to-play game for the C-64.

THE ULTIMATE SCREEN SHOT *by Morton Kevelson* **49**
You can make your screen shots top-of-the-line with the hints this article provides.

***C-128 SCREEN DUMP** *by Trent Bills* **54**
Screen dumps on the C-128 are inconvenient and time-consuming—unless you use this handy program.

DEPARTMENTS

RUNNING RUMINATIONS **8**
CES highlights.

MAGIC *by Jim Borden* **10**
The original column of hints and tips for performing computing wizardry.

***MEGA-MAGIC** *by Michael Myers* **13**
Tips and techniques that are bigger than Magic. This month: a file lock for the C-64 and C-128.

SOFTWARE GALLERY 18
Reviews of:
- Destiny
- Ghostwriter 128
- Super Sunday
- Fleet Filer
- Jane
- Speed King
- Cyber Video
- World Games
- Marble Madness

***EASY APPLICATIONS** *by Michael Broussard* 56
Short, but useful, applications for your Commodore computer. This month: a program for converting the amounts in your favorite recipes.

TELECOMPUTING WORKSHOP *by David Bradley* 66
Advice and answers to your questions on modems, terminal programs, bulletin boards and more.

THE RESOURCE CENTER *by Margaret Morabito* 70
Attend the Electronic University to earn college credits and even a degree, right in your own home.

COMMODORE CLINIC *by Jim Strasma* 90
Got a problem or question related to Commodore computing? This monthly column provides the answers.

HARDWARE GALLERY 96
Reviews of:
- The NLQ Chip
- The MPS-1200 Printer

MAIL RUN 100

NEW PRODUCTS RUNDOWN 102

LEARN TO WALK BEFORE YOU RUN 106
First steps for new Commodore owners.

HOW TO TYPE LISTINGS FROM RUN 107

LIST OF ADVERTISERS 112

COMING ATTRACTIONS 112

PUBLISHER
STEPHEN TWOMBLY

EDITOR-IN-CHIEF
DENNIS BRISSON

TECHNICAL MANAGER
MARGARET MORABITO

MANAGING EDITOR/PRODUCTION
SWAIN PRATT

REVIEW EDITOR
BETH JALA

COPY EDITOR
PEG LEPAGE

NEW PRODUCTS EDITOR
HAROLD BJORNSEN

TECHNICAL EDITOR
TIMOTHY WALSH

ASSOCIATE EDITORS
JIM BORDEN; JIM STRASMA

ART DIRECTOR
ROSSLYN A. FRICK

PRODUCTION/ADVERTISING SUPERVISOR
HOWARD G. HAPP

DESIGNERS
ANNE DILLON
ROGER GOODE

ASSOCIATE PUBLISHER/SALES MANAGER
STEPHEN ROBBINS

SALES REPRESENTATIVES
KENNETH BLAKEMAN
NANCY POTTER-THOMPSON

CLASS ADS
HEATHER PAQUETTE-EAST COAST
BRENDA BILLHEIMER-WEST COAST

WEST COAST SALES
GIORGIO SALUTI, MANAGER
3350 W. BAYSHORE ROAD, SUITE 201
PALO ALTO, CA 94303

AD COORDINATOR
SUE DONOHOE

SECRETARY
LAURA LIVINGSTON

EXECUTIVE SECRETARY
CYNDE GARRETT

MARKETING MANAGER
WENDIE HAINES

BUSINESS MANAGER
BARBARA HARRIS

RUN (ISSN 0741-4285) is an independent journal not connected with Commodore Business Machines, Inc. *RUN* is published monthly by CW Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. Phone 603-924-9471. Second-class postage is paid at Peterborough, NH, and at additional mailing offices. Canadian second-class mail registration number is 9565. Subscription rates in U.S. are $19.97 for one year, $29.97 for two years and $41.97 for three years. In Canada and Mexico, the one-year subscription rate is $22.97, with U.S. funds drawn on a U.S. bank. Foreign subscriptions are $39.97 for one year, with U.S. funds drawn on a U.S. bank. Please inquire about foreign air mail subscription rates. *RUN* is nationally distributed by International Circulation Distributors. **Postmaster**: Send address changes to *RUN*, Subscription Services, PO Box 954, Farmingdale, NY 11737. (Send Canadian changes of address to *RUN*, PO Box 1051, Fort Erie, Ontario, Canada L2A 5N8.)

Entire contents copyright 1987 by CW Communications/Peterborough, Inc. No part of this publication may be printed or otherwise reproduced without written permission from the publisher. Programs published in this magazine are for the personal use of the reader; they may not be copied or distributed. All rights reserved. *RUN* makes every effort to assure the accuracy of articles, listings and diagrams published in the magazine. *RUN* assumes no responsibility for errors or omissions in editorial or advertising content.

*THIS PROGRAM IS AVAILABLE ON THE MARCH-APRIL RERUN DISK. SEE PAGE 64 FOR DETAILS.

PRESIDENT
JAMES S. POVEC

VICE PRESIDENT/FINANCE
ROGER MURPHY

DIRECTOR OF OPERATIONS
MATT SMITH

EXECUTIVE CREATIVE DIRECTOR
CHRISTINE DESTREMPES

DIRECTOR OF CIRCULATION
FRANK S. SMITH

DIRECT MARKETING MANAGER
BONNIE WELSH

SINGLE COPY SALES MANAGER
LINDA RUTH

TELEMARKETING MANAGER
KATHY BOGHOSIAN

SPECIAL PRODUCTS DIRECTOR
JEFF DETRAY

SPECIAL PRODUCTS MANAGER
CRAIG PIERCE

DIRECTOR OF CORPORATE PRODUCTION
DENNIS CHRISTENSEN

TYPESETTING MANAGER
LINDA P. CANALE

TYPOGRAPHER
DOREEN MEANS

MANUFACTURING MANAGER
SUSAN GROSS

DIRECTOR OF CREDIT SALES & COLLECTIONS
WILLIAM M. BOYER

Manuscripts: *RUN* invites its readers to send contributions in the form of manuscripts with drawings and/or photographs to be considered for possible publication. The procedure for submitting an article is outlined in the *RUN* writer's guidelines, which you can obtain by sending a self-addressed, stamped envelope. All contributions, queries, requests for writer's guidelines and any other editorial correspondence should be directed to *RUN*, Editorial Offices, 80 Elm St., Peterborough, NH 03458; telephone: 603-924-9471.

Advertising inquiries: Send your correspondence to Advertising Offices, CW Communications/Peterborough, Inc., 80 Elm Street, Peterborough, NH 03458; telephone: 800-441-4403.

Subscription problems or address changes: Call 1-800-227-5782 (NY and Canadian residents, 1-800-732-9119) between 9 a.m. and 5 p.m. EST, Monday-Friday, or write to *RUN*, Subscription Department, PO Box 954, Farmingdale, NY 11737.

Problems with advertisers: Send a description of the problem and your current address to: *RUN*, 80 Elm Street, Peterborough, NH 03458, ATTN.: Cynde Garrett, Customer Service, or call 1-800-441-4403.

Microfilm: *RUN* is available in Microform from University Microfilms International, 300 N. Zeeb Road, Dept. P.R., Ann Arbor, MI 48106.

Back Issues: *RUN* back issues are available for $3.50, plus $1 postage and handling from: *RUN*, Back Issue Orders, 80 Elm St., Peterborough, NH 03458. On orders of 10 or more back issues, there is a flat $7.50 shipping and handling fee. Quantities are limited, and we cannot guarantee that all back issues are available.

Problems with ReRUN: Address correspondence to ReRUN, 80 Elm St., Peterborough, NH 03458.

***RUN*'s BBS:** The Running Board is *RUN*'s reader feedback bulletin board, which you can call anytime, day or night, seven days a week for up-to-date information about the magazine, the Commodore industry and news and information of interest to all Commodore users. Call: 603-924-9704. The Running Board uses a standard protocol, 300 baud, one stop bit, no parity, full duplex and a word length of eight bits.

"21 SECOND BACKUP" ™
(VERSION 4-1)

The SOLUTION
TO DISK DUPLICATION FOR COMMODORE-64

FAST — Duplicates diskettes in **21-seconds***.
SIMPLE — One keystroke provides complete backup.
RELIABLE — Error free reproduction from originals.

DUPLICATION PROCESS INCLUDES:
- ★ Automatic formatting and disk analysis.
- ★ Duplication of errors, track and sector ID's, gaps, checksums, sync bytes, address marks, clock bits, and densities.
- ★ Track to track synchronization.
- ★ Half track and abnormal track duplication.

ADDITIONAL FEATURES
- Easy to follow menu driven software.
- Snap on hardware installation.
- Program designed for use with 1 or 2 1541 drives.
- Hardware is transparent when "21 second backup" is not in use.
- "Verify option" to ensure transfer of proper data.
- User provided with exact duplicate of original (will not break protections).
- "21 seconds backup" will strengthen parameter copiers.

*Heavily protected disks will take maximum 45-seconds

NEW UPDATES—CALL

ANOTHER GREAT PRODUCT

SUPER FAST FILE BACKUP UTILITY

FEATURES INCLUDE:
- ★ Same hardware as "21 second backup"
- ★ Uses 1 or 2 1541 drives
- ★ Copy files; copies 36 blocks (9k) per-second
- ★ Modifies directories and adds seperators
- ★ Renames files, disk names, and ID's
- ★ Swaps, deletes, and transfers files
- ★ Disk analysis; verifies entire diskette
- ★ Validates files with accuracy
- ★ Formats entire diskette in 10-seconds
- ★ Split screen directory viewing

PLUS **15 SECOND BACKUP**

Duplicates entire non-protected diskettes in 15-seconds

21-second backup (with hardware)	$39.99
Super fast file backup utility (with hardware)	$39.99
21-second backup + super fast file backup utility	$55.99
21-second backup (disk only)	$19.99
Super fast file backup utility (disk only)	$19.99

Add $7.00 shipping, handling, and insurance
All prices in U.S. currency.
Quebec residents add 9% sales tax.
Always same day shipping

ORDER TODAY
Send — money order to:

VG DATA SHACK
5625 Grande Allée Blvd,
Loc (5), Brossard, Québec,
Canada, J4Z 3G3

Phone — (514) 445-9663,
(514) 445-9598, (514) 656-8952

WE ACCEPT

MasterCard VISA AMERICAN EXPRESS

Circle 80 on Reader Service card.

Circle 76 on Reader Service card.

A disk each month delivered to you...
packed with programs for your Commodore.

EIGHT PROGRAMS AND MORE ON EVERY DISK. What's the opposite of "downtime"? It's UPTIME, of course. Just imagine ... a disk each and every month, delivered right to your door and packed with programs for your Commodore.

We make it easy and inexpensive. You deserve value. At UPTIME we believe in value. That's why each month 30,000 people like you enjoy a disk full of programs and information.

Make your life easier! Get more from your computer. Organize your life and be more productive with **home management** programs. Expand your knowledge with **educational** programs. Relax and enjoy monthly **games** or **adventures.** Make using your Commodore a snap with helpful **tutorials** and handy **utilities.** It's terrific!

DISCOVER UPTIME. You deserve the best from your Commodore. Have the best and save the most with UPTIME.

Subscribe now and save.
You won't believe the low price! Satisfaction guaranteed or your money back. Make the very next disk yours. Fill in the coupon and return it to us, or simply call. We'll start your subscription immediately. For **immediate service,** call toll-free:

1-800-437-0033
anytime, day or night.

QUALITY PROGRAMS LESS THAN 60¢ EACH

NEW FOR ALL COMMODORE C64 AND 128 COMPUTERS

A Typical Issue Includes:

Label Magic ■ Living Art ■ Yotsi ■ File Doctor ■ Financial Package ■ One Foundation ■ Calendar ■ Decision Maker

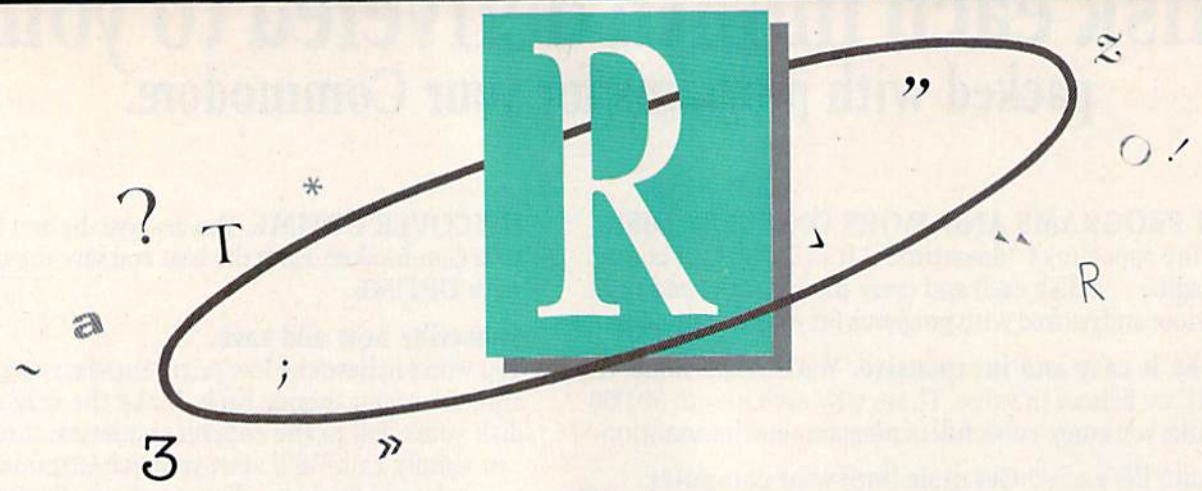
I'LL BYTE!!! SAVE 60% ↗12 I'm a Commodore enthusiast who wants more. Please start my subscription to **UPTIME** immediately.

12 Disk Issues $72.00 ☐
6 Disk Issues $48.00 ☐
3 Disk Issues $30.00 ☐
1 Disk Issue $11.95 ☐

(Add $2 per issue in foreign countries, except Canada and APO)

Name _____
Address _____
City _____ State _____ Zip _____
Type of Computer _____
☐ Payment enclosed. (Make checks payable to UPTIME.)
Bill my: ☐ Visa ☐ MC Exp. Date _____
Signature _____
Account No. _____

Send to:
UPTIME · PO Box 299
Newport, RI 02840
(401) 849-4925



CES Highlights

The year's CES show in Las Vegas lived up to its billing as the most important event in the home computing industry. Unlike recent shows, which were victims of a sagging interest in the home computer market, this year's interest level was at its peak with the cornucopia of computer products presented. There was something for everyone—hardware, software, peripherals and applications.

Commodore, infected with the PC clone fever, seems poised to garner its share of that crowded market with the introduction of two PC-compatible machines, the PC10-1 and PC10-2.

Built-in features on these machines include a disk drive (one on the PC10-1 and two on the PC10-2), MS-DOS, power supply, serial and parallel ports, monochrome or color capability and a configuration to accommodate a hard disk.

Both these 8088-based models feature a detachable keyboard, and the layout of the keys is similar to that of the IBM PC, with ten function keys and a numeric keypad. The PC-10s also feature five expansion slots.

The PC10-1, which contains 512K RAM (expandable to 640K), will sell for $999. The double-disk version, with 640K, will sell for $1199. The PC-10s will be sold primarily through computer dealers, according to Commodore officials.

Commodore also introduced another computer model—the 128-D, which is simply a C-128 with a detachable keyboard and built-in disk drive and power supply. One Commodore official noted that this "convenience item" allows users to operate with the keyboard on their laps or on their desks.

The computer console, where the power supply and disk drive are housed, also serves as a monitor stand. This affords the user a smaller *footprint*, a computer buzzword bandied about at this year's show. For the space-conscious computerist, this simply means that the 128-D (as well as the PC machines) will take up less room on your desk.

The unit sells for about the same price as the C-128 computer and disk drive sold separately ($599).

Both the 128-D and PC-compatibles have been marketed successfully in Europe and are making their first entry in the U.S.

For the 64/128 line, Commodore introduced several new peripherals to meet the needs both of new customers and existing Commodore computerists:

—the plug-in 1764 RAM expansion module, which gives 64 owners an additional 256K of memory and greatly decreases program loading and saving time. Price is $129.

—the 1581 disk drive, which accommodates 3½-inch disks and, with a capacity of 808K and a faster data transfer rate, is primarily intended as a mass-storage device. Cost is $399.

—the 1351 two-button mouse at a cost of $49.

Other themes at the CES show included:

—low-cost software. Good news for the software purchaser on a budget—software prices are coming down! For example, Mindscape has recently created a software division to market a line of inexpensive programs. The division, entitled Thunder Mountain, features inexpensive 64 programs. Another software company, Constellation Software, demonstrated its line of low-priced products at the show. Both of these companies primarily feature software that was originally marketed in Europe.

—education. Several interesting products demonstrated at the show included Software for Children, from Hearsay, Inc, and Talking Teacher, from Firebird. Both products are learning tools aimed at making learning fun for youngsters through voice interaction with the computer.

—GEOS. Berkeley Softworks demonstrated its series of GEOS applications, including geoCalc (spreadsheet), geoFile (database), Writer's Workshop (writing environment) and geoDex (a Rolodex-type accessory). According to president Brian Dougherty, Berkeley will soon be marketing a C-128 version of GEOS, which will feature 80-column screen capability. Also, Commodore's 1764 RAM expander will feature a GEOS RAM disk, which will allow you to make use of the GEOS applications.

This is just a random sampling of some of the products featured at this year's CES. (RUNwill feature in-depth reviews of these and other products in subsequent issues.)

This year's show generated more excitement and enthusiasm for the Commodore home computing market than I've witnessed in some time. The smart money here in Las Vegas says the home computer market is back and as strong as ever. Any takers?

db

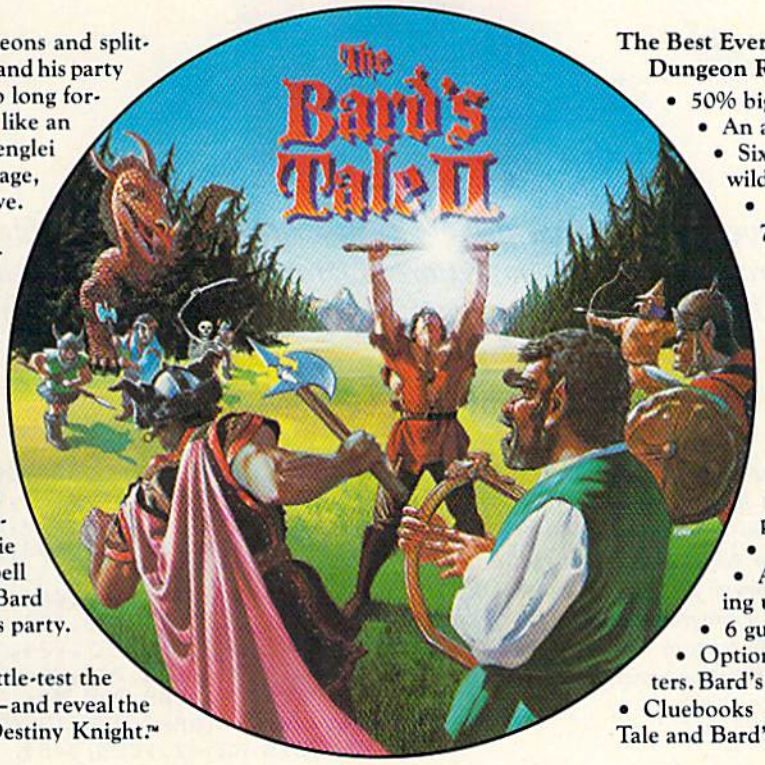
"The Bard is Back!"

From impossible dungeons and split-second snares, the Bard and his party emerge. The Sceptre, so long forgotten, gleams with power like an exploding sun. Even Phenglei Kai, the ancient archmage, bows his head in awe.

"I smell serpents!" Slipfinger squeals, stealing away like the thief he is. Two arch-dragons slither out of the ground, their eyes burning with the relentless fury of treasure lost.

Protected behind the flame lizards, beyond the reach of normal weapons, a cackling wizard begins the eerie chants of a death spell. A spell that can finish the Bard and his party.

The time has come to battle-test the magic of the Destiny Wand – and reveal the awesome powers of The Destiny Knight.™



The Best Ever Dungeon Role-Playing Game

- 50% bigger than Bard's Tale.™
- An all-new story line.
- Six cities and a huge overland wilderness to explore.
- Dozens of new spells – 79 spells in all.
- New real-time dungeon puzzles. You have to get through them before the clock stops ticking.
- Summon and name monsters to become a permanent part of your party.
- More strategy in combat encounters – the weapons and spells you choose depend on the enemy's distance.
- A bank and casino.
- A starter-dungeon for building up your low-level characters.
- 6 guilds for easier game saving.
- Optional use of Bard's Tale characters. Bard's Tale experience not required.
- Cluebooks available for both Bard's Tale and Bard's Tale II.™

You get a new class of magic user – the Archmage. With 8 powerful spells like Heal All, Fanskar's Night Lance, and the awesome Mangar's Mallot.

Snarls of defiance are heard from 12 Kner Drones (10'), and 6 PickPockets (10').
Will your stalwart band choose to (F)ight or (R)un?
Kner Drones

There are over 100 monsters, like this Kner Drone. Many animated. All dangerous.

25 scrolling dungeon levels. All in color. All 3-D. Including 7 different Snares of Death, a new kind of real-time puzzle.

The Bard's Tale II

The Destiny Knight

from

ELECTRONIC ARTS™

Optional use of characters from Ultima III™ or Bard's Tale™

HOW TO GET IT: Visit your retailer, or call 800-245-4525 (in CA call 800-562-1112) for VISA or Mastercard orders. To buy by mail, send a check, money order, or VISA or Mastercard information to Electronic Arts, P.O. Box 7530, San Mateo, CA 94403. The price is $39.95 for the Commodore 64 version. Add $5 for shipping and handling ($7 Canadian). Allow 1-4 weeks for delivery. The Bard's Tale II and Electronic Arts are registered trademarks of Electronic Arts. Ultima is a registered trademark of Richard Garriott. Commodore is a trademark of Commodore Electronics Ltd. For a copy of our complete catalog, send 50¢ and a stamped, self-addressed envelope to Electronic Arts Catalog, 1820 Gateway Drive, San Mateo, CA 94404.

Circle 3 on Reader Service card.

MAGIC

Discover an undocumented C-128 keyword; speed up Datafile sorts and improve its Find option; restore programs accidentally erased; convert 40-column, hi-res pictures to Ultra Hi-Res format, and more.

By JIM BORDEN

Magic is the original *column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for* RUN*'s imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:*

Magic
RUN *Magazine*
80 Elm St.
Peterborough, NH 03458

RUN *will pay $10 to $50 for each trick accepted for publication in the column. If your submission is selected for the Trick of the Month,* RUN *will award $50 and a Magic Contributor T-shirt. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and the C-128. Tricks for the C-128 only are not eligible.*

$3B0 C-64 SYS a Border—Creating screen borders with the Print command can be quite a chore. Here's a machine language alternative. This routine can be appended to your program to create borders with your own character and color. The ML program that SYS a Border creates is relocatable and may be loaded wherever you have 100 bytes of free memory. Please note that locations 251 through 254 are used during the execution of the ML program.

The syntax for using SYS a Border is SYS address, screen code #, color code #. The demo at the end of the Basic loader shows how to create a border with the asterisk in the current cursor color.

```
1 REM 64 SYS A BORDER-FRANK COLARICCI
2 REM RELOCATABLE-JUST CHANGE 'BR'
3 BR=49152:REM SYS ADDRESS
4 FOR X=BR TO BR+99:READ A:POKE X,A
5 T=T+A:NEXT:IFT<>14085 THEN{2 SPACEs}STOP
6 DATA 032,253,174,032,158,173,032,247
7 DATA 183,140,000,004,032,253,174,032
8 DATA 158,173,032,247,183,140,000,216
9 DATA 162,039,173,000,004,157,000,004
10 DATA 157,192,007,173,000,216,157,000
11 DATA 216,157,192,219,202,016,235,169
12 DATA 039,133,251,133,253,169,004,133
13 DATA 252,169,216,133,254,162,024,173
14 DATA 000,004,160,000,145,251,200,145
15 DATA 251,173,000,216,145,253,136,145
16 DATA 253,165,251,024,105,040,144,004
17 DATA 230,252,230,254,133,251,133,253
18 DATA 202,208,220,096
100 PRINT"{SHFT CLR}{3 CRSR DNs}SAMPLE"
110 SYS BR,42,PEEK(646)
```

Frank Colaricci
Winter Park, FL

$3B1 DFMail record groups—Adding the following lines to DFMail (*RUN*, December 1984) will print selected parts of a mailing list. It's useful, for example, for addressing a mailing to club members who have not paid their dues. First, sort on a field containing dues payment information, then view to see the first and last record numbers of those who have not paid. You can then print labels for just the delinquent members.

```
1047 PRINT"{CRSR DN}{4 SPACEs}{CTRL 9}C{CTR
     L 0}ONSECUTIVE GROUP OF RECORDS"
1059 IFC$="C"GOTO1326
1326 INPUT"BEGIN WITH WHICH RECORD (0 TO EX
     IT)";FS:IFFS=0GOTO1040
1328 IFFS>XTHENPRINT"NO SUCH RECORD":GOTO13
     26
1330 INPUT"END WITH WHICH RECORD (0 TO EXIT
     )";LS:IFLS=0GOTO1040
1332 IFLS<FSTHENPRINT"TRY AGAIN!":GOTO1326
1334 FORI=FSTOLS:GOSUB1268:NEXT:GOTO1040
```

Stanley L. Anderson
Tishomingo, OK

$3B2 Checking monitor resolution—The next time you shop for an 80-column monitor, test its resolution right in the store with this short program:

```
10 PRINT CHR$(14):FOR A = 1TO40*23:PRINT",V";:NEXT
```

Powerful Software. Persuasive Prices.

Here's four programs that combine power, ease of use and a reasonable price to give you all the tools you need to get your work done faster, easier and better:

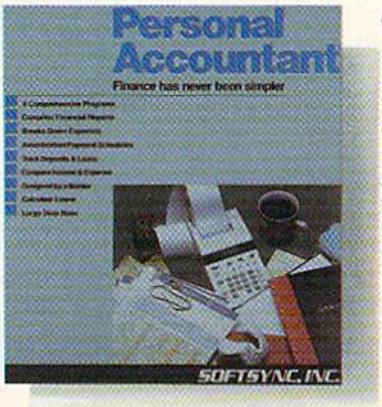
Desk Manager™

Five tools to organize your desktop.

Desk Manager puts five useful tools in your computer that you can access instantly. It's a simple word processor that gives you the ability to crank out quick letters without the fancy footwork. An appointment calendar to keep your schedule in order. A phone book for keeping track of long lost friends or new found clients. A note pad so you don't ever forget the greatest idea you ever had. And, for good measure, a calculator. Commodore128 and 64 versions are $39.95 (suggested retail price).

Personal Accountant™

Your financial genius.

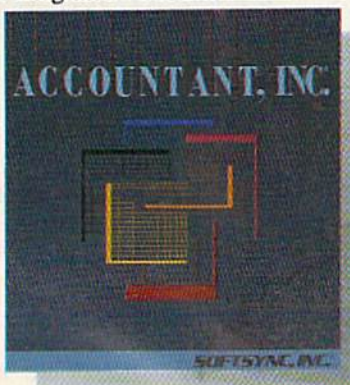


The Personal Accountant will keep track of your income, expense, loans, and deposits. It will tell you about your net worth, profits, taxes, and even speculate about the future. It generates professional financial statements and account histories. It calculates loans and future value of savings and it even keeps track of phone numbers. You don't have to know anything about debit and credit to put the Personal Accountant to work for you. And you don't have to be a financial genius to know that this is money well spent. Spend $34.95 (Commodore 64 and 128) to keep your financial life in order and invest the rest.

Accountant, Inc.™

Professional Business Accounting

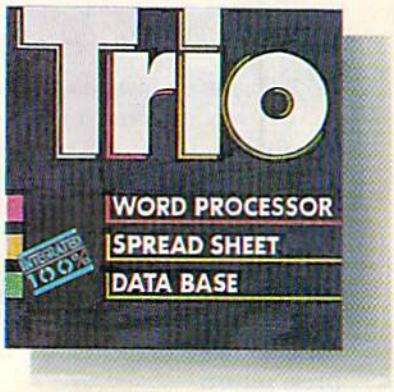
Accountant, Inc. puts the essential elements needed for a professional business system into a form you can understand. It gives you everything in a single package: A General Ledger with integrated Accounts Receivable and Payable Ledgers. Plus extensive business profiles and tutorials. Accountant, Inc. also provides valuable analysis such as reports on profits margins, expenses, outstanding invoices, customer and supplier account histories. Commodore 128 version: $99.95 (suggested retail prices).



TRIO™

One program for all your applications.

Put the three most important software applications at your fingertips. An easy-to-use word processor, a powerful spreadsheet and a highly flexible data base. If you'd like to exchange information between these programs, do mail merging, project profits, organize lists, write dazzlingly fast, create form letters and more, you'll find TRIO is the most powerful integrated software package you can buy for the money. Commodore 128, $69.95; Commodore 64, $49.95 (suggested retail price).



Softsync, Desk Manager, TRIO and Personal Accountant are trademarks of Softsync, Inc. Apple, Commodore and IBM PC are trademarks of Apple Computer, Inc., Commodore Business Machines, Inc. and International Business Machines, Corp respectively.

SOFTSYNC
HARD WORKING SOFTWARE

Ask your local dealer or call us for a free full color catalog. Softsync, Inc., 162 Madison Avenue, New York, NY 10016 (212) 685-2080.

Circle 84 on Reader Service card.

Enter the program and run it. The screen will fill with 23 lines of commas and lowercase v's. To check the resolution, look at the single pixel that forms the point of the center of the v or the tail of the comma. On a monochrome monitor the pixels should be a single round point of light. On a color monitor only one color should predominate, with only slight spilling of the primary colors (red, green and blue) at the edges of the display area. You might want to try different color combinations for the screen and text, too.

Since only one "gun" is used to produce the monochrome picture, the image is sharper and clearer than the color image. Remember that adjusting the brightness, contrast, color and tint also affects picture quality.

Paul L. Hubbard
Baltimore, MD

$3B3 C-64 disk verify tip—After saving a program to disk, I always verify it with VERIFY "*",8 to save time. This works on the C-64 and VIC because * accesses the last file saved or loaded. (The exception is when you initially turn on the drive; it refers only to the first file on the disk.)

Hal Vaughn
Mount Airy, NC

$3B4 C-128 input control—In the September 1986 issue of *RUN*, trick $32F for the C-64 put an "invisible" quotation mark in an Input statement so that you could enter commas and colons when inputting data. My program does the same thing on the C-128 in 128 mode.

```
10 REM C-128 INPUT CONTROL-SUE HOFFMAN
20 PRINT"[PROMPT HERE]";:TC=RCLR(5):SW=PEEK
   (215):IFSW<>0THENSW=6
30 COLOR5,RCLR(SW):PRINT"{2 CRSR RTs}"CHR$(
   34)CHR$(27)"O{3 CRSR LFs}";
40 COLOR5,TC:POKE208,1:POKE842,29:INPUTA$
50 PRINT"A$="A$:IFA$<>"END"GOTO20
```

Sue Hoffman
Hudson, WI

$3B5 Base conversions—Did you ever wish there was an easy way to convert a number from one number base to another? The C-128's Monitor mode makes conversion easy! Just type MONITOR and press return (or use the F8 key) to put you into the built-in monitor. To change a number from one base to another, type +, $, & or % and the number. You'll be given the decimal (+), hexadecimal ($), octal (&) and binary (%) equivalents. Just precede the number with the appropriate symbol, and you can convert from any base to the others. To return to Basic, type X and press return.

Kenneth H. Hottes
Danbury, CT

$3B6 Irish Jig 128—Ah, the luck of the Irish! Bring out the "wee bit o' Irish" in your C-128 with this popular Irish jig.

```
10 REM AN IRISH JIG-JESSE BROWN
20 ENVELOPE 0,2,0,15,5,2,200:TEMPO 19
30 PLAY "V104T0U15X0":PLAY"V203T5U15X0":PLA
   Y"V303T6U15X0"
40 A$="V104WRV203.HG V303.HCM V104WR V203.H
   G V303.HCM V203.HC V303.HG V105QEICQEICM
    V203.HC V303.HG V105QEICIGIFIEM V203.HC
    V303.HG V105QFIDQFIDM"
50 B$="V203.HC V303.HG V105QFIDIFIEIDM V203
   .HC V303.HG V105QEICQEICM V203.HC V303.H
   G V105QEICIGIFIEM V203QD V105IFIEIF V203
   IRQG V105QD V203IR V105IGM"
60 BB$="V203QC V105IEICIC V203IR V105QC V20
   3QC V105IR V203IRM"
70 PLAY A$:PLAY B$:PLAY BB$+A$:PLAY B$+BB$
```

Jesse B. Brown
Eunice, LA

$3B7 C-64 input prompt—Sometimes the standard input prompt can get in the way of elegant programming. For instance, when writing a financial program, you may want the question mark replaced with a dollar sign. My short routine rewrites Basic into RAM to let you do just that. Insert the data loader at the beginning of your program and activate the machine language routine with SYS 49152. A dollar sign will appear whenever the Input statement is called.

You can restore the question mark at any time, or you can use any other character you want. Just poke the selected character code into location 43846. If you prefer that no character appear, try using a 32 (the space character) as the prompt character.

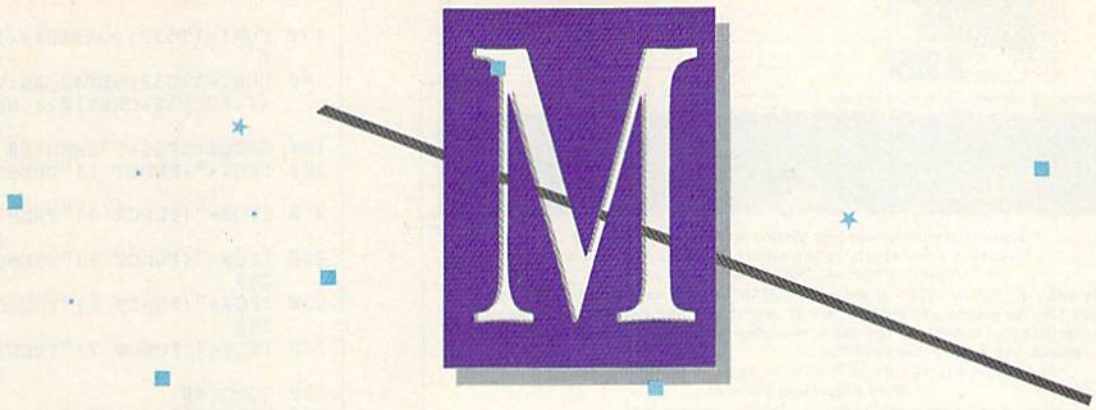
```
30 REM DOLLAR INPUT-KENT BRIDWELL
40 CK=0:FORI=49152 TO 49223:READ A
50 CK=CK+A:POKE I,A:NEXT
60 IFCK<>11068THENPRINT"DATA ERROR!":END
70 SYS49152:REM >>TEST PROMPT NOW
80 PRINT:INPUT"ENTER PRICE: ";D
90 PRINT:PRINT"PRICE IS $"D
100 DATA 169,000,133,251,133,253,169,160
110 DATA 133,252,133,254,169,255,141,072
120 DATA 192,169,191,141,073,192,160,000
130 DATA 177,251,145,253,230,251,208,002
140 DATA 230,252,165,251,205,072,192,208
150 DATA 010,165,252,205,073,192,208,003
160 DATA 076,060,192,230,253,208,002,230
170 DATA 254,076,022,192,169,036,141,070
180 DATA 171,165,001,041,254,133,001,096
```

Kent M. Bridwell
Santa Monica, CA

$3B8 C-64 & C-128 fraction action—Magic trick $340 (*RUN*, October 1986) converts decimal fractions to common fractions, but it is quite slow. My program works faster, reducing the fractions much as you or I would.

```
10 REM COMMON FRACTIONS-SISTER ANNE STREMLA
   U
20 INPUT "{CRSR DN}GIVE ME A DECIMAL NUMBER
   ";N$
30 FORX=1TO LEN(N$)
40 IF MID$(N$,X,1)="."THEN FLAG=1:D=X
50 NEXT:IF VAL(N$)=0THEN END
60 IF FLAG <>1 THEN PRINTN$:GOTO20
70 L$=LEFT$(N$,D-1):R$=RIGHT$(N$,LEN(N$)-D)
```

Continued on p. 76.



EASY-TO-USE SUBROUTINES AND UTILITIES

Mega-Magic, an extension of the RUN *Magic column, offers each month an interesting and useful subroutine or utility program. Although noticeably longer than those in the Magic column, these listings are still short enough to type in easily and quickly.*

File Lock—Unintentionally scratching an irreplaceable file can drive you mad. File Lock for the C-64 and C-128 (in 40-column mode) will prevent you from scratching such files in the future by locking them on the disk and later unlocking them as you need. File Lock will lock program, sequential, user and relative files. However, it won't load locked files on the 1571 disk drive in 1571 mode.

Type in File Lock using either 64 or 128 Perfect Typist, because an incorrect line could scramble the disk. Also, *don't* abbreviate PRINT. When you're done, save the program before you run it.

Try File Lock first on a practice disk, just in case you did make a typing error. To use File Lock, load it and then replace the disk it's on with the disk containing the programs you intend to lock.

When you run the program, the screen will display a short menu, beneath which will appear a window displaying the name of the first file on your disk. If you wish to lock it, press F5.

Using the F1 key, move through the directory one filename at a time. Each time you reach a file you want to lock, press F5. To unlock a file, press F6 when its name appears in the window.

After you've gone through the whole directory, list it again. You'll find that the listing for each locked file includes a less-than symbol (<) to the right of the file type—PRG<, for example. When you're finished locking and unlocking files, press F7 to quit.

File Lock will also display the track (always 18) and the sector numbers (1–18) that the directory of filenames is stored on. Once you get used to which files are where on a disk, you'll be able to reach specific files quickly by using the F3 key to move to the right sector and then the F1 key to move to the file in that sector that you want. R

Michael Myers
Beardstown, IL

Listing 1. *File Lock program.*

```
10 REM 64/128 (40 COLUMN) FILE L
   OCK-MICHAEL MYERS     :REM*218
20 OPEN15,8,15:OPEN2,8,2,"#":S=1
   :POKE53281,12:IFFRE(0)=FRE(1)
   THEN50                :REM*182
30 R=133:FORP=1TO7STEP2:KEYP,CHR
   $(R):KEYP+1,CHR$(R+4):R=R+1:N
   EXT                   :REM*252
40 IFPEEK(215) THENPRINT"40 COLU
   MN MODE ONLY!!":CLOSE15:END
                         :REM*132
50 PRINT"{CTRL 1}{SHFT CLR}{2 CR
   SR DNs}{CTRL N}{SHFT F}{SHFT
   I}{SHFT L}{SHFT E} {SHFT L}{S
   HFT O}{SHFT C}{SHFT K}{3 CRSR
    DNs}"                :REM*22
60 PRINT"F1{2 SPACEs}={2 SPACEs}
   {SHFT N}EXT {SHFT F}ILE"
                         :REM*38
70 PRINT"F3{2 SPACEs}={2 SPACEs}
   {SHFT N}EXT {SHFT S}ECTOR"
                         :REM*110
80 PRINT"F5{2 SPACEs}={2 SPACEs}
   {CTRL 9}{SHFT L}OCK{CTRL 0} {
   SHFT F}ILE!"          :REM*162
90 PRINT"F6{2 SPACEs}={2 SPACEs}
   {CTRL 9}{SHFT U}NLOCK{CTRL 0}
    {SHFT F}ILE!"        :REM*94
100 PRINT"F7{2 SPACEs}={2 SPACEs
   }{SHFT Q}UIT":GOSUB350:GOTO1
   20                    :REM*22
110 RESTORE:S=S1:IFS>18ORS<1THEN
   S=1                   :REM*42
120 PRINT"{HOME}{3 CRSR DNs}{SHF
   T T}RACK: 18 {SHFT S}ECTOR:"
   S"{CRSR LF} "         :REM*54
130 PRINT#15,"U1";2;0;18;S:PRINT
   #15,"B-P";2;0:GET#2,T$,S$:S1
   =ASC(S$+CHR$(0))      :REM*182
140 PRINT#15,"U1";2;0;18;S
                         :REM*148
150 READP:IFP=0THEN110   :REM*140
160 PRINT#15,"B-P";2;P   :REM*224
```

→

RUN It Right

C-64; C-128 (in 40-column mode)

A powerful word processing system for the Commodore 128
Includes: • On screen status/help display • 45 Fonts ready to use
• Font editor/creator included • Foreign Language Disk

From the author of *FONTMASTER II* comes ***FONTMASTER 128,*** an enhanced version for the Commodore 128. This powerful word processor, with its many different print styles (fonts), turns your dot matrix printer into a more powerful tool. Term papers, newsletters and foreign languages are just a few of its many applications. Here are some of its capabilities:

NOW WITH NO COPY PROTECTION — USES HARDWARE KEY

Word Processing Features

- Over 65 powerful commands make text editing a breeze
- 45 + Fonts (includes Russian, Greek, Hebrew, Arabic)
- Room for 9 SUPERFONTS concurrently
- Text memory: approximately 64k Bytes
- Supports more than 100 printers
- 80 columns
- PRG file merge
- File names can be picked from disk directories
- 4 keyboard macros
- Headers/footers
- Page number in decimal or Roman
- On screen underlining/highlighting of text blocks
- On screen status display, including pictures of fonts
- New font preview displays printer output on screen
- On screen bi-lingual editing
- Form letter/data merging
- Multi-color help screens
- Right-to-left editing features for foreign languages
- Loads in approximately 15 seconds with 1571 drive
- New formatters for inserting graphics into documents

Word Processing Printing Features

- 50 + two-letter format controls (embedded in text files)
- Fractional character spacing used on word-wrap, justification, centering, and right alignment
- Proportional spacing (user-adjustable)
- Columnar printing (up to 4 columns)
- Overlaying of 2 or more characters (for phonetic markings, diacritics, etc.)
- 30 single-keystroke text modifiers (embedded in text files)
- Combine any or all of the following effects: underlining (adjustable) · more than 20 pitches · more than 50 line spacing sizes · condensed text · boldfacing · inversion (white letters on black) · superscripts (adjustable) · 3 text heights (micro-normal-tall)

Setup Module

- Two system setups can be made. In each, user can select his preference of colors (screen, text, cursor), printer interface (20 choices), and printer (over 100 choices)

Font & Character Set Creators

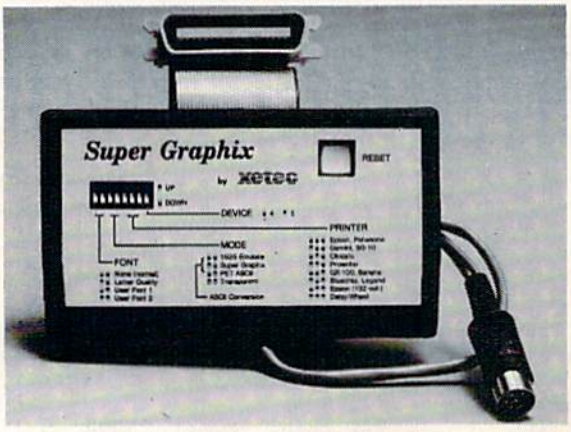
- Disk commands for maintenance of fonts or sets
- Grid for character creation/editing (manipulated with cursor keys, joystick, or light pen)
- Editing commands include: invert, flip, negate, shift, clear, copy
- Character can be printed while editing (font creator only)

Bauhaus	Futura	Monogram	Stencil
Broadway	Goodtype	News	Stop
Burgundy	Hairpin	Olde English	Tech
BUSORAMA	Italic	Pierrot	ФЯЬБОЏЯ
Celtic	Manhattan	Print	ΛΒΞΔΕΦΓΗ
Dungeon	ЈОГГІМ	Script	⊓⊥⊤⊤⊓⊥
Freehand	ΘçΣδμ'↑	Shadow	⊕БЧΞ⊕Фгх

Xetec, Inc. • 2804 Arnold Road • Salina, KS 67401 • (913) 827-0685

Circle 96 on Reader Service card.

Super Graphix



Includes: Utility Disk With 27 Fonts And Font Creator

GRAPHICS and FONTS plus an 8K BUFFER for the ultimate in performance and speed. The XETEC Super Graphix interface for Commodore Computers now offers a new high in technology with these features:

- 8K Buffer Standard
- 10 Printing Modes
- 3 Internal Screen Dumps
- Extensive Command Channel
- Reset Button to Halt Printing from Buffer
- Switch Settings on Label for Quick Reference
- Correspondence Quality Font Built-In
- Capable of Storing 2 Additional Fonts
- Correct Graphics/Text Aspect Ratio for all Major Printers
- 8 Active Switches with Changes Constantly Monitored
- Internal Fonts Support Super-script, Sub-script, Underlining, Bold-face and Choice of 9 Pitches

Suggested list $99.95 • ***Includes Lifetime Warranty***

Xetec, Inc. / 2804 Arnold Rd. / Salina, KS 67401 / 913-827-0685

Circle 114 on Reader Service card.

Listing 1 continued.

```
17Ø  FORI=1TO32:POKE1544+I,32:NEX
     T                          :REM*2Ø8
18Ø  FORI=1TO32:GET#2,A$:POKE1544
     +I,ASC(A$+CHR$(Ø)):NEXT
                                :REM*126
19Ø  GETQ$:IFQ$=""THEN19Ø  :REM*12
2ØØ  IFQ$="{FUNCT 1}"THEN15Ø
                                :REM*7Ø
21Ø  IFQ$="{FUNCT 3}"THEN11Ø
                                :REM*178
22Ø  IFQ$="{FUNCT 5}"THENQ=1:GOTO
     26Ø                        :REM*52
23Ø  IFQ$="{FUNCT 6}"THENQ=2:GOTO
     26Ø                        :REM*8Ø
24Ø  IFQ$="{FUNCT 7}"THEN34Ø
                                :REM*24Ø
25Ø  GOTO19Ø                    :REM*68
26Ø  PRINT#15,"B-P";2;P    :REM*69
27Ø  GET#2,A$:IFA$=""THENA$=CHR$(
     Ø)                         :REM*1Ø1
28Ø  IFQ=1THENA=ASC(A$)OR64
                                :REM*123
29Ø  IFQ=2THENA=ASC(A$)AND191
                                :REM*73
3ØØ  PRINT#15,"B-P";2;P   :REM*1Ø9
31Ø  PRINT#2,CHR$(A);           :REM*47
32Ø  PRINT#15,"U2";2;Ø;18;S
                                :REM*73
33Ø  GOTO16Ø                    :REM*1Ø1
34Ø  CLOSE2:CLOSE15:PRINT"{SHFT C
     LR}BYE...":END             :REM*63
35Ø  PRINT"{CRSR DN}{COMD A}{32 S
     HFT *s}{COMD S}"      :REM*189
36Ø  PRINT"{SHFT -}{32 SPACEs}{SH
     FT -}"                     :REM*3
37Ø  PRINT"{COMD Z}{32 SHFT *s}{C
     OMD X}":PRINT" {UP ARROW}"
                                :REM*149
38Ø  PRINT" {COMD Z}{2 SHFT *s}{S
     HFT F}ILE {SHFT T}YPE {SHFT
     C}ODE:"                    :REM*167
39Ø  PRINT"{4 SPACEs}A=SEQ B=PRG
     C=USR D=REL"               :REM*11
4ØØ  PRINT:PRINT"{CTRL 9} {SHFT S
     }HIFTED={SHFT L}OCKED{2 SPAC
     Es}{SHFT U}NSHIFTED={SHFT U}
     NLOCKED "                  :REM*125
41Ø  RETURN                     :REM*213
42Ø  DATA2,34,66,98,13Ø,162,194,2
     26,Ø                       :REM*9
```

■

Mega-Magic Needs Your Contributions

RUN's Mega-Magic column depends for its appeal and usefulness on contributions from our readers. If you have a relatively short subroutine or utility program that requires only brief documentation, spruce it up and send it along. It should be comparable in quality and length to other Mega-Magic items we have published. Payment will be made upon acceptance. Mail your contributions to:

Mega-Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

tcp DOES MAIL ORDER RIGHT

GREAT PRICES

"We buy in volume and pass the savings onto you!!!"

FAST SERVICE

"Over 90% of all items ordered are in stock and shipped within 24 hours."

FEDERAL EXPRESS

"Software orders over $50.00 will be shipped Federal Express. You only pay TCP's standard shipping charge of $4.00 per order. This offer also valid on peripherals and accessories under 8 pounds. Orders arriving before 11:00 am our time will be shipped out same day."

BEST SELECTION

"We stock hundreds and hundreds of products for commodore computers! Every week we add even more. We're the first to get in all the hot new software releases. Just another reason why we should be your first call!!"

Peter Sattler President TUSSEY COMPUTER PRODUCTS

"I'm proud we deliver all of these. Response from tens of thousands of satisfied customers can only mean we're doing mail order right!"

EDUCATIONAL & CORPORATE ACCOUNTS:

We offer a full line of services catering to you. **Including; quick turn-around, personal service, and the flexibility to serve your organizations needs. Credit Approval in 24 hrs for any organization with a good D&B rating.**

To reach our Educational and Corporate Sales Department directly, Call 1-800-533-1131 or Inside PA Call 814-234-2236

OTHER CUSTOMERS PLEASE CALL THE NUMBER LISTED BELOW

FREE COMMODORE 1660 MODEM COUPON

with the purchase of any of these packages ordered MAR 29th or before*

Commodore 128 computer 1571 Disk Drive	$478.00
Commodore 128 computer 1571 Disk Drive 1902A Monitor	$737.00
Commodore 64C computer 1541 Disk Drive	$349.95
Commodore 64C computer 1541 Disk Drive 1802C Monitor	$549.95

*Coupon is redeemable by mail for (1) 1660 Modem - Call for more information.

CALL TOLL FREE 1-800-468-9044 Inside PA Call 814-234-2236

Circle 209 on Reader Service card.

tcp DOES MAIL ORDER RIGHT

OPEN: 9am-8pm Mon-Fri, 10am-5pm Sat EAST COAST TIME
NEW HRS STARTING MAR 01: 9am-9pm M-Thur, 9am-6pm Fri, 10am-6pm Sat, Noon-6pm Sun

INFORMATION AND PA ORDERS 814-234-2236

GAME GALLERY
Educational Software too! All Games stocked for quick ship!!!

NEW TITLES
IN STOCK EVERYDAY!!
If you don't see what you want please call!!!

MISC GAMES
Hobbitt	$CALL
Sargon III	$37.95
Murder by the Dozen	$24.95

ACCESS
Beach Head	$24.95
Beach Head 2	$29.95
Leader Board	$29.95
Leader Board Tourn. Disk	$16.95
Tenth Frame	$27.95

ACCOLADE
Dam Busters	$22.95
Fight Night	$22.95
Hard Ball	$22.95
Law of the West	$22.95
PSI 5 trading co	$22.95
Spy vs Spy	$12.49

ACTIONSOFT
Call for price on all Actionsoft titles

ACTIVISION
Alcazar	$19.95
Borrowed Time	$19.95
Comp. Firewks Celebrat'n	$19.95
Countdown to shutdown	$19.95
Fast Tracks Slot Car Const	$19.95
Gamemaker Scifi Library	$15.95
Gamemaker Sports Library	$15.95
Garry Kitchen's Gamemakr	$24.95
GBA Basketball 2 on 2	$24.95
Ghostbusters	$24.95
Great Amer RR	$24.95
Hacker	$19.95
Hacker II	$24.95
I am the 64	$21.95
I am the 128	$24.95
Little Computer People	$24.95
Master Of Lamps	$19.95
Mindshadow	$19.95
On Court Tennis	$21.95
Pitfall II: Lost Caverns	$19.95
Shanghai	$26.95
Space Shuttle	$19.95
Star Rank Boxing	$21.95

ARTWORX
International Hockey	$18.95

AVALON HILL
Dr Ruth	$21.95
Gulfstrike	$22.95
Spitfire 40	$24.95
Superbowl Sunday	$26.95
Team Disk for SS	$16.95

BRODERBUND
Champshp Lode Runner	$24.95
Karateka	$19.95
Lode Runner	$24.95
Music Shop	$29.95

BLUE CHIP
Baron	$24.95
Millionaire	$24.95
Tycoon	$24.95

COMMODORE
Sky Travel	$27.95

DAVIDSON & ASSOR
now in stock! Call for price on titles

DATA EAST
Commando	$24.95
Karate Champ	$26.95
Kung Fu master	$26.95

DATA SOFT
Pole Position	$15.95

ELECTRONIC ARTS
Adventure Constr	$27.95
America's Cup	$24.95
Amnesia	$29.95
Archon	$12.95
Archon 2	$27.95
Artic Fox	$24.95
Autoduel	$37.95
Bard's Tale	$32.95
Bard's Tale II	$29.95
Battlefront	$29.95
Carriers at War	$37.95
Chessmaster 2000	$26.95
Cut and Paste	$12.95
Europe Ablaze	$37.95
Hard Hat Mack	$13.95
Heart of Africa	$12.95
LordS of Conquest	$24.95
Mail Order Monsters	$12.95
Marble Madness	$27.95
Moebius	$29.95
Movie Maker	$27.95
M.U.L.E.	$12.95
Murder Party	$25.95
Music Construction Set	$12.95
Ogre	$29.95
One on One	$12.95
Pinball Construction Set	$12.95
Quizam	$20.95
Racing Destruction Set	$12.95
Reach for the Stars	$32.95
Realm of Impossible	$12.95
Robot Rascals	$29.95
Seven Cities of Gold	$12.95
Sky Fox	$24.95
Software Golden Oldies	$16.95
Starfleet I	$32.95
Super Bolder Dash	$12.95
Tim Leary's Mind mirror	$24.95
Touchdown Football	$22.95
Ultima I	$29.95
Ultima III	$37.95
Ultima IV	$45.95

EPYX
Championship Wrestling	$27.95
Movie Monster	$22.95
Summer Games	$26.95
Summer Games II	$26.95
Super Cycle	$29.95
Temple Trilogy	$29.95
Winter Games	$27.95
World Games	$29.95
World's Greatest Baseball	$24.95
World's Greatest Football	$28.95
World Karate Cha	$22.95

Call for prices on other EPYX products !

FIREBIRD
Elite	$22.95
Pawn	$27.95

INFOCOM
Balley Hoo	$29.95
Cut Throats	$22.95
Deadline	$25.95
Enchanter	$25.95
Hitchhiker's Guide	$22.95
Infidel	$29.95
Leather Goddesses	$24.95
Moon Mist	$24.95
Planetfall	$25.95
Sorcerer	$29.95
Spellbreaker	$29.95
Suspect	$29.95
Trinity	$32.95
Wishbringer	$25.95
Witness	$25.95
Zork I	$22.95
Zork II	$26.95
Zork III	$26.95

INVISICLUE BOOKS FOR ANY INFOCOM GAME $6.95

LANCE HAFNER
Final Four Basketball	$29.95
Basketball, the Pro Game	$29.95

MICROLEAGUE
Microleague Baseball	$27.95
Microleague general mgr	$27.95
Microleague 1985 teams	$15.95

MICROPROSE
Acrojet	$24.95
Crusade in Europe	$27.95
Decision in the Desert	$27.95
F-15 Strike Eagle	$21.95
Gunship	
Conflict in Vietnam	
Hellcat Ace	$21.95
Kennedy Approach	$24.95
NATO Commander	$24.95
Silent Service	$24.95
Solo Flight	$24.95
Spitfire Ace	$21.95
Top Gunmen	

MINDSCAPE
Bank Street Music Writer	$27.95
Bank Street Storybook	$27.95
Bop-n-Wrestle	$21.95
Castle Clobber	$18.95
Halley Project	$27.95
Indiana Jones	$22.95
Indoor Sports	$22.95
Infiltrator	$21.95
Quake minus one	$17.95
Shadowfire	$17.95
Star Trek Promethian Adv	$29.95
Perfect Score:SAT prep	$49.95
The Lords of Midnight	$17.95

Call for prices on other MINDSCAPE products!

RADARSOFT
Floyd the Droid	$19.95
Maps USA	$34.95
Maps Europe	$34.95
World Maps	$34.95

SIERRA
Championship Boxing	$17.95

SIMON & SHUSTER
Paper Airplane const.	$CALL
JK Lasser's Income Tax	$39.95
Kermit's Story Maker	$19.95
NY Times Crossword Puzzle Vol. 1 or 2	$14.95
Spy Hunter	$31.95
Star Trek: Kobayashi alt.	$29.95
Typing Tuto. III	$29.95

SPECTRUM HOLOBYTE
Gato	$CALL

SPRINGBOARD
Early Games	$26.95
Easy As	$29.95
Piece of Cake Math	$26.95

SUBLOGIC
Flight Simulator II	$32.95
Football	$37.95
FS II Scenery disk	$15.95
Jet	$29.95
Night Mission Pinball	$CALL
Pure Stat Baseball	$37.95

WEEKLY READER STICKY BEAR SOFTWARE
now in stock! Call for price on titles!

Random House, Spinnaker, and SSI products in stock!!! Call for Price!

C-64 BUSINESS AND PRODUCTIVITY

C-64 DATABASES
Bank Street Filer	$34.95
Consultant	$39.95
Data Manager	$19.95
Fleet Filer	$29.95
Pocket Filer 64	$24.00
Profile 64	$36.95

C-64 INTEGRATED PKGS
Homepak	$39.95
Trio	$CALL
Vizastar 8k	$79.95

C-64 SPREADSHEETS
Calkit	$39.95
Pocket Planner 64	$CALL
Practicalc(d) or (t)	$CALL
PS, Programble Sprdsht	$19.95
Swiftcalc 64 w/sideways	$39.95
Sidways	$19.95
Vizastar 64	$79.95

C-64 WORD PROCESSORS
Bank Street Writer	$CALL
Bank Street Speller	$34.95
Cut & Paste(EOA)	$12.95
Fleet System II	$CALL
Font Master II	$34.95
Kid Pro Quo	$32.95
Paperclip	$37.95
Paperclip w/spellpack	$49.95
Pocket Writer	$CALL
Pocket Writer Dictionary	$19.95
Spellpro 64	$32.95
Trio	$CALL
Wordpro 3+/64	$14.95
Wordpro 64	$36.95
Wordpro GTS	$CALL
Word Writer 64 w/speller	$34.95

FINANCIAL & ACCT.
Cashbox	$36.95
Cont. Home Acct.	$46.95
Financial Time Machine	$29.95
Softsync Pers. Acct.	$32.95
Timeworks Electr. Checkbk	$19.95
Timeworks General Ledger, A/R,A/P, Payroll, Invtory ea	$40.95
Timeworks Money Mgr	$19.95

GRAPHICS
CADPIC	$32.95
Clip Art I	$19.95
Clip Art II	$CALL
Graphics Library I, II, or III	$16.95
Graphics Scrapbk 1 or 2	$17.95
Newsroom	$34.95
Picasso's Revenge w/pen	$CALL
Print Shop	$25.95
Print Shop Companion	$24.95

MISC. HARDWARE
Estes pwr supply for C-64	$54.95
Naverone 3 Slot expander	$27.95

UTILITIES
GT4	$22.95
Copy II 64	$24.00
C Power	$69.95
CSM 1541 align	$34.95
Fast Load	$24.95
Mach 5	$24.95
Merlin 64	$34.95
Pal 64	$32.95
Power 64	$32.95
Toolbox 64	$59.95
Quest Stat manager	$34.95
Vorpal fast loader	$CALL

FREE LIGHT PEN w/purchase of Picasso's Revenge Painting Program $42.95

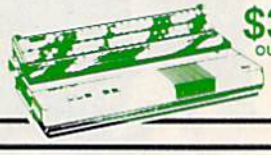
PRINTERS

star MICRONICS INC
NX-10
PRICE DROP TO
$207.95

NP-10	$184.95
NX-10C	$CALL
NX-15	$349.00
NL-10C	$CALL
POWERTYPE	$229.00

18cps, daisywheel

BROTHER 1509
180 CPS DOT MATRIX PRINTER, 15" CARRIAGE, FRICTION AND TRACTOR FEED, 45 CPS NLO MODE, & 3K BUFFER. USES EPSON FX PRINT CODES.



$379 OUR PRICE

Epson Printers 1 yr warranty
LX-80	$229.00
HOMEWRITER 10	$CALL
FX-85e	$359.00
FX-286e	$CALL
RX-100	$279.00
DX-10	$CALL
HS-80 INKJET	$CALL

XETEC
Fontmaster 128...	$CALL
Fontmaster 64	$34.95

SEIKOSHA
2 YR WARRANTY
SP-1000VC $164.95

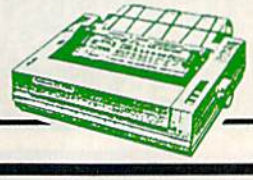
JUKI
6100P	$CALL
5510P includes color kit	$CALL

Printer Interfaces

MW-350 w/10k buffer	$CALL
XETEC Supergraphix	$CALL
XETEC Supergraphix Jr	$46.95

PANASONIC
2 YR WARRANTY

1080i $199.95
1090i, 1092i ..... $CALL
3131 Daisywheel $CALL



tcp TUSSEY COMPUTER PRODUCTS
P.O. BOX 1006
STATE COLLEGE, PA 1680

Circle 209 on Reader Service card.

tcp DOES MAIL ORDER RIGHT

CALL TOLL FREE 1-800-468-9044

MONITORS

COMPOSITE COLOR
Call for Composite Color Monitors

MONOCHROME
ZENITH 1220 12" flat amber $94.00
ZENITH 1230 green $94.00
GOLDSTAR 12" med resolution amber or green $79.95
MAGNAVOX 8562 2 yr warranty monochrome mode $259.95
THOMPSON 36512VC mono mode separated video $249.95

MODEMS

SHAREDATA $36.95
VOLKS 6480 300/1200 baud $CALL
WESTRIDGE $49.95
MESSENGER $42.95
1660 $CALL
MITEY MO 459.95
VIP TERMINAL $34.95
COMPUSERVE STR KIT $19.95
PLAYNET STARTER KIT $14.95

CMS

General Acct System

includes: • General Ledger • Accts Receivable • Billing Statements • Accts Payable • Check Writing • Job Costing • Payroll

Pkg. Price for all Modules:
C128 version $124.95
C64 version $119.95

TCP leads the way!!!

128 AND 64
HARD DRIVES
FROM JCT

Plugs into the disk drive port just like the 1571 to maximize compatibility. 5 year warranty on the mechanical portion of the Hard Drive. 1 Year warranty on electronics. Immediate replacement within 1 year.

MODELS AVAILABLE:

JCT 1005, 5mb ..... $CALL
JCT 1010, 10mb ..... $CALL
(less than $829.00!!! call for best price)

PRINTER PACKAGES

ALL PRINTERS INTERFACE WITH C-64 or C128

star

NX-10 & XETEC SUPERGRAPHIX.... $269.95
NX-10 & XETEC Supergraphix Jr. $249.95

PANASONIC

1080I and Xetec Supergraphix $259.95
1080I and Xetec Supergraphix jr . $244.95

SEIKOSHA

Call for price on new SP-1200 packages

OKIDATA

Okimate 10 Color Printer and Plug 'n' Print Module $159.95

EPSON $CALL FOR

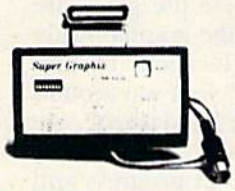
LX-86 & INTERFACE.. LOWEST PRICE
DX-10 DAISYWHEEL & XETEC Supergraphix Jr..... $219.95

BROTHER

1509 & XETEC SUPERGRAPHIX..... $419.00

XETEC

SUPER GRAPHIX
Interface w/8k buffer
down loadable fonts
$$$LOWEST PRICE
SUPER GRAPHIX JR
printer interface $46.95



Abacus

NOW IN STOCK!! Call for price on all books and software titles

Broderbund

Broderbund Print Shop . $25.95
Print Shop Companion .. $22.95
Graphics Library I, II, or III $16.95
120 sheet color paper refil 40 each red, blue, gold .. $8.95
Certificate Maker $32.95
Thinking Cap $32.95
Certificate Library $24.95
Toy Shop $42.95
Holiday Pack $16.95

DISKS

per box of 10
BONUS DISKS
SS/DD $6.45
DS/DD $6.95
NASHUA DISKS
SS/DD $8.95
DS/DD $9.45
TUSSEY DISKS
SS/DD $8.45
DS/DD $8.95
Call for Price on Verbatim and Maxell Disks!!

Digital Solutions Inc.

Pocket Writer 2 .... $42.95
Pocket Filer 2 ..... $42.95
Pocket Planner 2 $42.95
Digital Superpak .. $74.95
Dictionary $12.95

MODEM MANIA

1670 MODEM $99.95
1200 Baud, w/Software
1660 MODEM $42.95
300 Baud, w/Software

Unison World

Printmaster $29.95
Art Gallery ..... $CALL

SOLUTION UNLIMITED

Icon Factory $29.95
Billboard Maker $29.95

Software orders over $50.00 will be shipped FEDERAL EXPRESS (yes, even with *these* prices)

You only pay TCP's standard shipping charge of $4.00 per order. This offer also valid on peripherals and accessories under 8 pounds. Orders arriving before 11:00 AM our time will be shipped out same day.*

FEDERAL EXPRESS

Computerized order entry, processing and status allow TCP to serve you faster and better!

COMMODORE 128= SOFTWARE

For 128 in 128 or CPM modes

WORD PROCESSORS

FLEET SYSTEM II w/spell ... $47.95
FLEET SYSTEM III w/spell & thesaurus ..... $CALL
FLEET SYSTEM 4 ..... $56.95
JANE $32.95
PAPERCLIP II ..... $CALL
PERFECT WRITER ..... $CALL
POCKET WRTER 128 ... $CALL
SUPERSCRIPT 128 ..... $59.95
TERM PAPER WRITER $34.95
VIZAWRITE 128 ..... $CALL
WORDPRO 128 ..... $59.95
WORDPRO 128S w/spell .... $CALL
W'DWRITER 128 w/spell $49.95

SPREADSHEETS

EPYX MULTIPLAN $39.95
PERFECT CALC ..... $CALL
POCKET PLANNER 128 ..... $CALL
SWIFTCALC 128 w/sdways.. $49.95

DATA BASES

CONSULTANT $39.95
DATE MANAGER 128 ..... $CALL
FLEET FILER $29.95
PERFECT FILER ..... $CALL
POCKET FILER 128 ..... $CALL
PROFILE 128 ..... $59.95
SUPERBASE 128 ..... $CALL

MISC. 128 SOFTWARE

A Mind Forever Voyaging $26.95
ACCOUNTANT INC $69.95
BUDDY 128 assembler $42.95
C POWER from Proline $59.95
DESK MANAGER 128 ..... $34.95
I am the C128 ..... $24.95
VIZASTAR 128 .....
MACH 128 ..... $39.95
MATRIX from Prog.Periph ... $47.95
PARTNER 128 ..... $54.95
PERSONAL ACCT.128 ..... $34.95
SYLVIA PORTER'S personal finance planner ..... $CALL $54.95

ALL COMMODORE PRODUCTS ON SALE NOW!!

AMIGA PACKAGES ..... $CALL
AMIGA EXTERNAL FLOPPY..... $CALL
1670 MODEM $124.95
1350 MOUSE $39.95
C128 COMPUTER ..... $NEVER LOWER
1571 DISK DRIVE ..... $CALL
1902A .....$LOWEST PRICE EVER
1750 RAM EXPANSION ..... $CALL
1802C $199.00
1700 RAM EXPANSION $99.00

COMMODORE 64C

ONLY $169.95

Includes GEOS & Quantum Link
1541C DISK DRIVE..... $CALL
1802C MONITOR..... $CALL

Berkeley Softworks

GEOS $39.95
Fontpack 1 ..... $CALL
Writers Workshop $33.95
Geodex $27.95
Deskpack $22.95

To order by mail: We accept money order, certified check, personal check. Allow 2 weeks for personal check to clear.
Shipping: $4.00 for software and accessories/ $10.00 for printers and color monitors/ $8.00 for disk drives and other monitors/ Add $3.00 per box shipped COD. Call for other shipping charges. Additional shipping required on APO, FPO, AK, HI, and foreign orders.
Terms: ALL PRICES REFLECT CASH DISCOUNT, ADD 1.9% FOR MASTERCARD OR VISA. Manufacturer's warranty honored with copy of our invoice. **ALL SALES ARE FINAL.** Defective items replaced or repaired at our discretion. Pennsylvania residents add 6% sales tax. Prices and terms subject to change without notice.

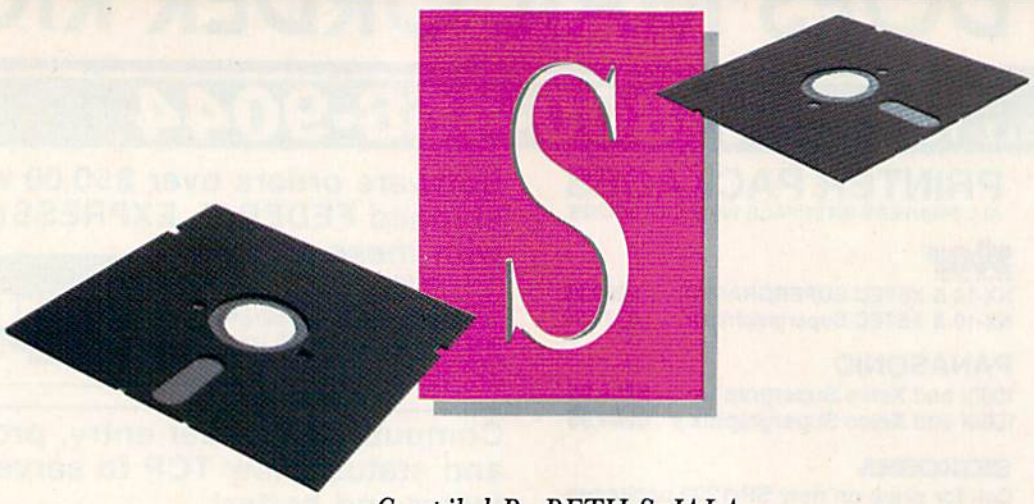
- If through some oversight we don't have the lowest price, we would appreciate the opportunity to beat it. If we can, you will get the benefit of our Federal Express shipping on software orders over $50.00.
- Purchase orders are accepted from qualified corporations and institutions.
- No sales tax on orders outside of PA.
- Buy with confidence. We honor manufacturers warranty.
- We accept Mastercard, Visa, COD and mail orders.

MasterCard VISA

CALL TOLL FREE 1-800-468-9044

tcp

Circle 209 on Reader Service card.



Compiled By BETH S. JALA

Destiny

B

Have Joystick, Will Travel
In This Point-
And-Click Adventure

Some game manufacturers take pride in their adventure games' ability to understand complex sentences. But if you don't like to type or you're a hunt-and-peck typist, having to enter complete sentences to make yourself understood can take the fun out of playing.

Destiny is a graphics adventure/role-playing game that eliminates this problem by requiring you to input only 23 simple verbs and the four major compass directions. You simply select the desired action from an on-screen list by pointing to your choice with a joystick-controlled hand icon and pressing the fire-button.

An inventory of the objects you acquire during the game is displayed when you select the List command or when you choose Use, Give or Put. Destiny also keeps track of traits such as your age, strength and health, as well as the number of gems and units of gold you possess.

When you encounter one of the many unfriendly creatures that roam the countryside, a tunnel or the underground city, a menu with three new options appears. You can attack, bribe the monster with gold or try to run away. If you attack first, you're liable to strike a damaging blow, but if you try to escape, you could fail, and your enemy might strike. By offering a bribe, you give up 50 units of gold, but in return you receive a clue that could help you out of some tight spots.

Because Destiny limits your input to the on-screen word list, you usually can figure out what to do in a given situation by trying all the possibilities. Nevertheless, other factors still make the game a challenge, especially for novice or intermediate adventurers. For example, many of the objects that you need to complete the game are carefully hidden in the graphics without a clue to their location. To find them, you must "feel" your way around each picture with the hand icon.

Destiny's faults are that you can save only one game in progress and when you save, you can't continue the adventure without rebooting and loading the saved game. Similarly, when your character bites the dust, there's no play-again option.

Aside from these limitations, Destiny is an enjoyable adventure that's probably challenging enough for all but advanced players and is perfect for anyone who's better at pointing and clicking than typing. *(Software Investments Plus, Inc., PO Box 13, Appleton City, MO 64724. C-64/$24.95 disk.)*

Bob Guerra
Charlestown, MA

Report Card

A ***Superb!*** An exceptional program that outshines all others.

B ***Very Good.*** One of the better programs available in its category. A worthy addition to your software library.

C ***Good.*** Lives up to its billing. No hassles, headaches or disappointments here.

D ***Mediocre.*** There are some problems with this program. There are better on the market.

E ***Poor.*** Substandard, with many problems. Should be deepsixed!

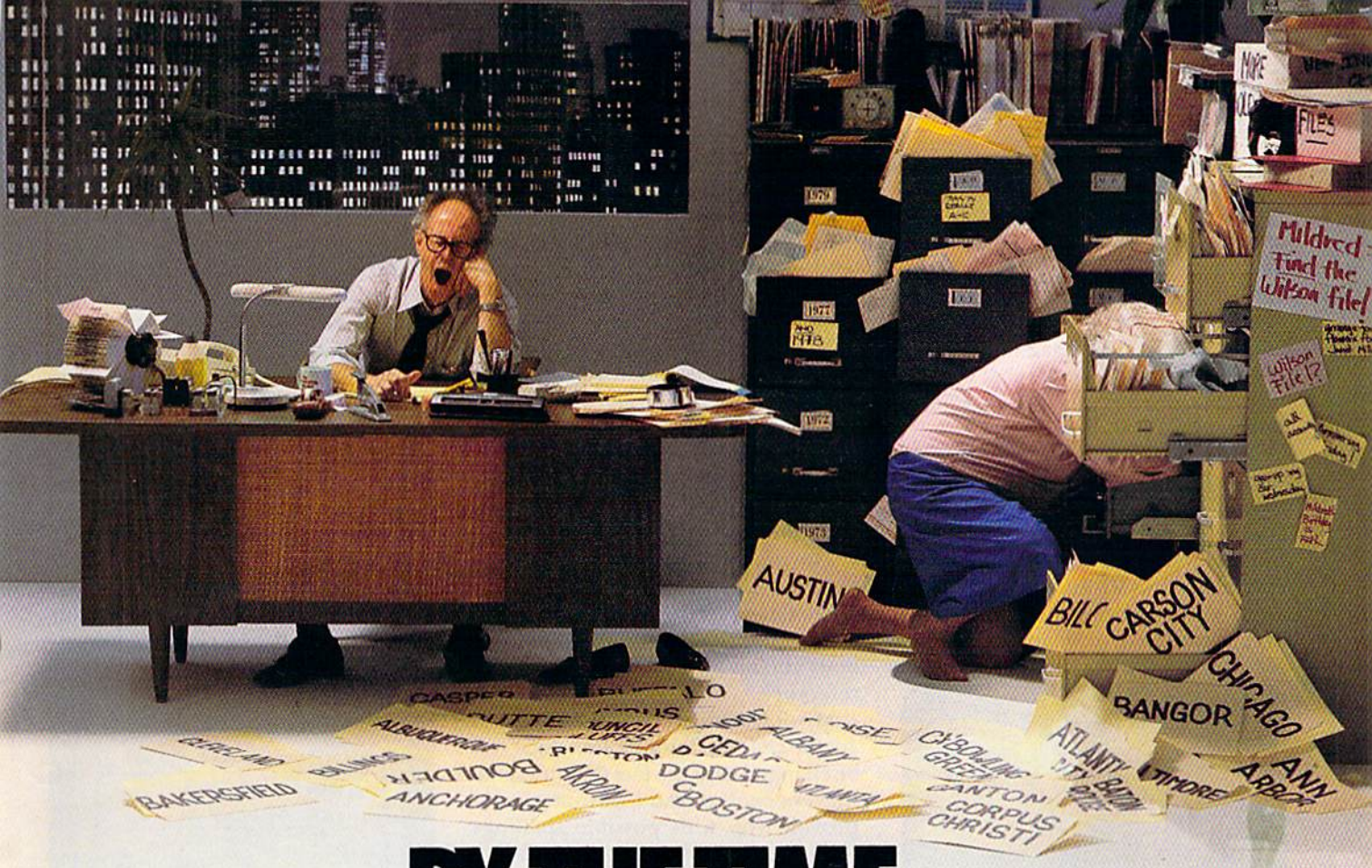
Ghostwriter 128

A

A Word Processor
From the Past
Rears Its Useful Head

In the early days of the C-64, many of us cut our word processing teeth on a program called Omniwriter. Although Omniwriter is now old in software terms, a lot of people still use this classic. It has withstood not only the test of time but also the test of later challengers. For those who've moved on to the C-128, Omniwriter has been reincarnated in the form of Ghostwriter 128.

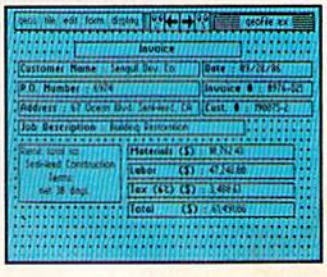
After the normal autoboot process, you're presented with the default screen. Although I found the default colors to be less than wonderful, the text, background and command bar can be cycled through the full range of colors until you find the combination you prefer. This operation also will introduce you to the formatting commands of Ghostwriter. The harmony of commands makes it easier to



BY THE TIME SHE GETS TO "PHOENIX," HE'LL BE SLEEPING.

Having thousands of facts is one thing. Finding the ones you need is another. Which is why you should consider buying geoFile. The easy-to-use database manager for GEOS-equipped Commodores.

Whether they're receivables or recipes, once you have geoFile, you can fly through facts in seconds, clicking and picking the ones you want, just the way you want them.



It's as simple as filling out a form.

The geoFile "form" organizes all kinds of information. Like names, numbers, rates of objects' acceleration when dropped from two-story buildings—you name it. As much as you can fit on a printed page.

Once your data is in, the real fun begins.

You want names of bus drivers? From Arizona? Under five foot six? Between the ages of 33 and 35? With incomes of $22,396 or more? Who sneezed in June?

Just click your mouse and watch geoFile go to work. Searching. Sorting. Comparing and listing the data alphabetically. Or numerically. Or in whatever priority your form specifies.

You can put the data into form letters and lists with geoMerge. Or into math functions, with geoCalc. Or if you really want to get fancy, you can display your information graphically with geoChart.

And geoFile does it all in seconds.

Now, with all that in mind, what are you going to do—spend a few bucks on geoFile?

Or spend all night wishing that you had?

To order call 1-800-443-0100 ext. 234

geoFile $49.95

(California residents add 6.5% sales tax.)

$2.50 US/$5.50 Foreign for shipping and handling. Allow six weeks for delivery.

Commodore and Commodore C64 are trademarks of Commodore Electronics, Ltd. GEOS, geoFile and Berkeley Softworks are tradenames of Berkeley Softworks.

GEOFILE

GEOS COMPATIBLE

Berkeley Softworks

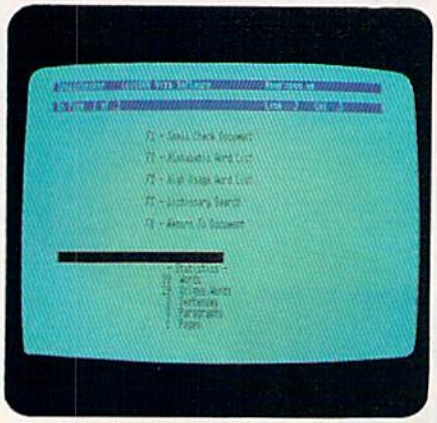
The brightest minds are working at Berkeley.

Circle 111 on Reader Service card.

commit to memory those that are most frequently used.

The list of commands is long, but it contains the text-editing features you'd expect in a good word processor—block move and copy, search and replace, document merge, insert and delete, and autopagination. You can call up a DOS wedge that lets you display a directory or format, scratch or rename a disk.

With both standard and numerical tab settings, Ghostwriter makes it easy to align columns, especially if those columns happen to be made up of numbers that must be aligned on the decimal point. Visible margins, word wrap and optional display of page breaks complete the word processor's features.



Use Ghostwriter 128 to check your spelling.

Ghostwriter's word processor and 30,000-word spelling checker fit on one side of a disk, thus eliminating swapping or flipping disks, contributing to speed and convenience.

The spelling checker provides a list that tallies things such as the number of words, number of unique words, and number of paragraphs in a document. It then asks you to insert the dictionary disk. Since the dictionary is on the same disk, you just hit the return key to display a two-column screen that lists all the words in the document, each preceded by a number indicating its frequency of use. Each word is highlighted as it's checked, and if not recognized by the dictionary, the word will remain highlighted.

The Mail Merge feature doesn't require merged data to be pulled from a particular database. Instead, you create your document with Mail Merge blanks in the proper places, then go to the alternate work screen to enter the information to fill in the blanks.

Many powerful word processors require that printer codes be set up as a series of dot commands preceding the body of the document. Ghostwriter 128 facilitates by allowing you to make selections from a print menu.

More than a dozen printers are supported by drivers within the program. Note that the use of text emphasis, such as boldface, underlining, subscripts and superscripts, is determined by your printer's capabilities. In addition, if your printer will accept them, you can use ASCII codes for fonts such as italic and double strike.

The documentation for Ghostwriter 128 is well written. The manual is divided into sections arranged in logical sequence, with a table of contents and an index for quick and easy reference.

My only criticisms of the program are the Default Color mode, which can be changed, and the fact that the spelling checker doesn't automatically provide you with possible spellings for unrecognized words. A search feature will look through the dictionary, however, and present you with the correct spelling.

These problems are minor, and it might be that a more sophisticated spelling checker for the C-128 is not yet possible. In any event, Ghostwriter 128 offers ease of use and high-power capabilities that are as good as anything I've seen—and better than many. *(HesWare, 390 Swift Ave., Suite 14, S. San Francisco, CA 94080. C-128/ $39.95 disk.)*

Ervin Bobo
St. Peters, MO

Super Sunday

B+

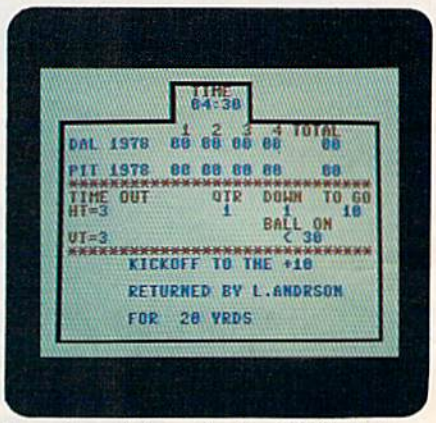
Have the NFL At Your Fingertips All Week Long

Given American attitudes toward football, especially our penchant for Monday morning quarterbacking and for making a national holiday out of the Super Bowl, Super Sunday is almost certain to be a winner.

The game involves you in a match-up between the greatest pro football teams of our time. Starting with the winner of the 1966 Super Bowl and ending with the victor in 1985, you can pick any two teams, match them in your own Home Bowl and let the arguments fall where they may.

Super Sunday can be played by one or two players. For a one-player game, the keyboard probably offers the best control. For two players, your selections can be made by joystick, thus keeping your computer table from being crowded with knees and elbows, as well as potato chips and beer.

You can select the visiting and home teams, game time, formations, and offensive and defensive teams. If you're dealing with teams so old you can't remember individual performances, each quarterback or runner listed is accompanied by his passing or rushing statistics, respectively.



Scoreboard from Avalon Hill's Super Sunday.

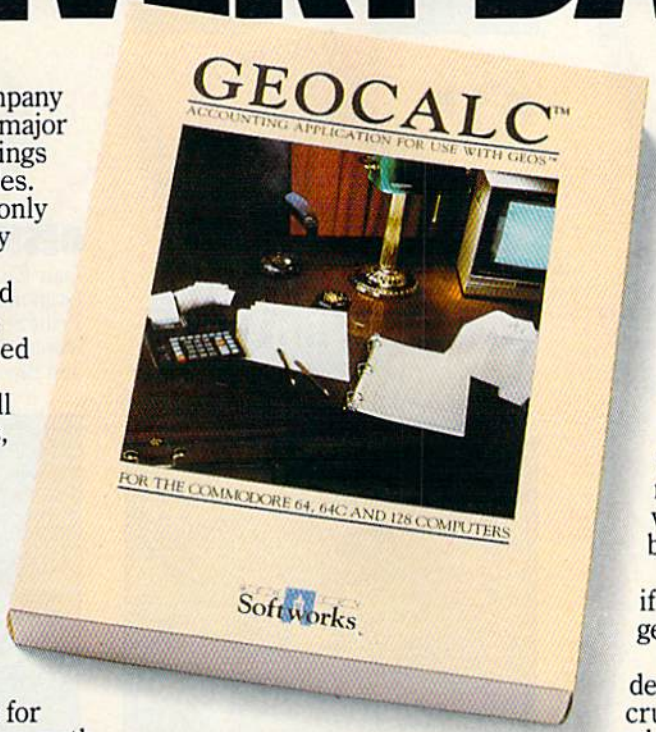
When you're presented with an overhead view of the scene, keep in mind that your computer is showing you almost one half of a football field, as well as 22 players. Graphics for the players are not great, but you can tell the different teams by the color of their uniforms.

To start a play, press the return key. It will seem as though you're watching a long shot on television: The players begin to move, the ball is thrown and (possibly) caught, and your man makes a run for a touchdown. After each play, a status board displays the score, time remaining, quarter, down and yards to go, and yards gained or lost.

If you don't feel up to coaching a Super Bowl team, Super Sunday allows for an autoplay mode in which each team selected plays according to the statistics compiled during the regular season of that particular year. Super Sunday also has provisions for

Continued on p. 24.

WE'RE SELLING THE ONE THING WE COUNT ON EVERY DAY.



Running a software company is no picnic. We have to do major calculations every day. Things like payables and receivables. Taxes. Budgets. And lord only knows how many quarterly cost projections.

That's why we developed geoCalc. The spreadsheet program for GEOS-equipped Commodores.

You see, we not only sell software for Commodores, we actually use them in our own offices. So when Lee needs to project inventory costs, or Brian wants to figure employee bonuses, the first thing they do is load up geoCalc.

The very same spreadsheet you can use at home for figuring finances, mastering math mysteries or personal production predictions.

With geoCalc, you get 112 columns and 256 rows to fill with all kinds of text and numbers. And formulas that range from simple addition to arctangents and cosines that could knock any physicist cold.

There are investment functions. Averages. Even a random number generator. And writing your own formulas is as easy as, umm... one, two, three.

With mouse in hand, you can zip all over the huge spreadsheet, solving "what if" questions with a few quick clicks. Questions like, "If Sheila takes the waitress job, how much can we expect our taxes to increase?" Or "How much faster will the Chevy go if we rip out the muffler and the back seat?"

No matter what the problem, if it has to do with numbers, geoCalc can solve it. Fast.

So if you notice a need to decimate digits, consider crunching them with geoCalc. We rely on it for our business. In fact, we couldn't manage without it.

geos | file | edit | options | special | display | search | sample

Operating Expenses

	A	B	C	D
4	Operating Expense			
5		January	February	March
6	Raw Materials	11000	11750	10750
7	Manufacturing	15000	14500	14050
8	Rent	4000	4000	4000
9	Labor	20000	20000	21000
10	Utilities	3000	3150	3100
11	Transportation	8000	7800	8000
12	Overseas Shipping	4000	4500	4250
13				
14	Total	65000	65700	65450
15				
16	Grand Total		196150	

To order call 1-800-443-0100 ext. 234

geoCalc $49.95

(California residents add 6.5% sales tax.)

$2.50 US/$5.50 Foreign for shipping and handling. Allow six weeks for delivery.

Commodore and Commodore C64 are trademarks of Commodore Electronics, Ltd. GEOS, geoCalc and Berkeley Softworks are tradenames of Berkeley Softworks.

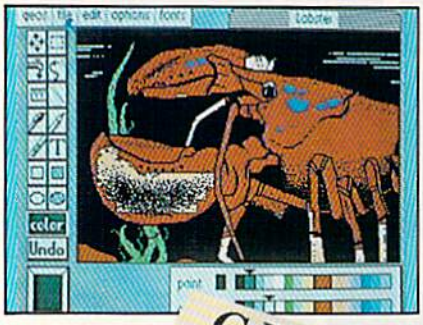
GEOCALC

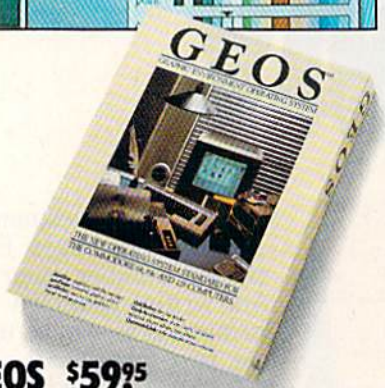
Berkeley Softworks

The brightest minds are working at Berkeley.

Circle 138 on Reader Service card.

IF YOU STILL THINK CO
PLAY AROUND



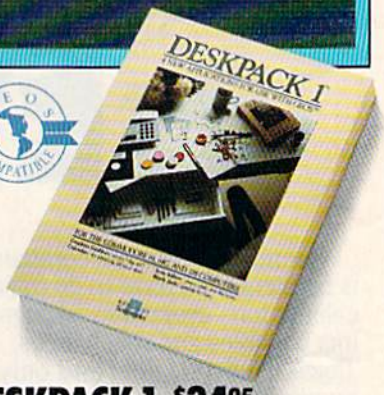


GEOS $59.95

The Graphic Environment Operating System that opens up a whole universe of new possibilities for Commodores. With geoWrite, geoPaint, fast-loading diskTurbo and support for all GEOS-compatible applications.

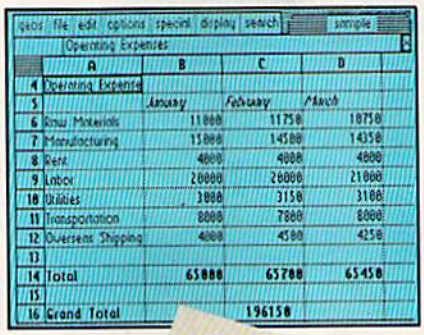
FONTPACK 1 $29.99

A collection of 20 more fonts for use with GEOS applications, in various shapes and sizes for more expressive and creative documents.

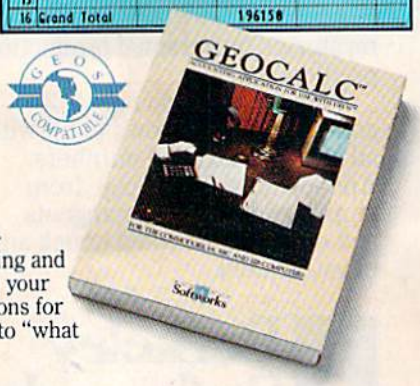


DESKPACK 1 $34.95

Four GEOS-compatible applications: Graphics Grabber for importing art from Print Shop,™ Newsroom™ and Print Master™ graphics; Calendar; Icon Editor and Black Jack Dealer.

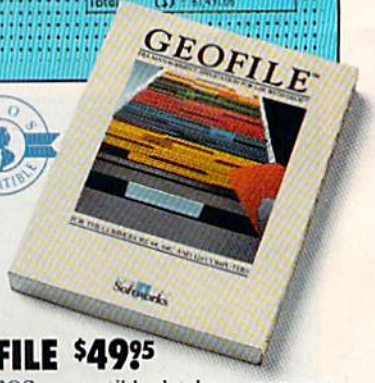


	A	B	C	D
4	Operating Expenses			
5		January	February	March
6	Raw Materials	11000	11750	10750
7	Manufacturing	15000	14500	14350
8	Rent	4000	4000	4000
9	Labor	20000	20000	21000
10	Utilities	3000	3150	3100
11	Transportation	8000	7800	8000
12	Overseas Shipping	4000	4500	4250
13				
14	Total	65000	65700	65450
15				
16	Grand Total		196150	



GEOCALC $49.95

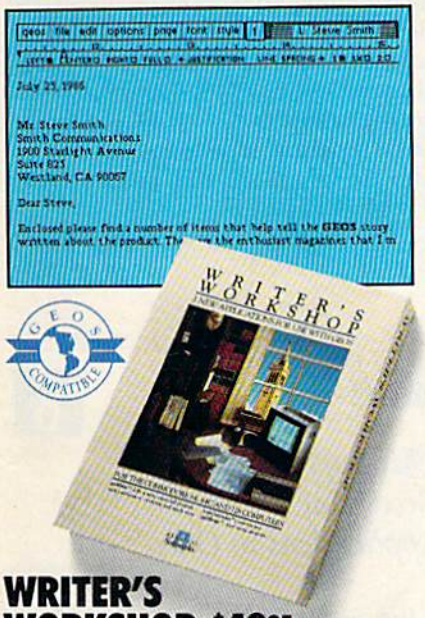
The GEOS-compatible, number-crunching spreadsheet for tracking and analyzing numerical data. Create your own formulas, perform calculations for anything from simple geometry to "what if" cost projections.



GEOFILE $49.95

The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there.

MMODORES ARE TOYS, WITH THESE.

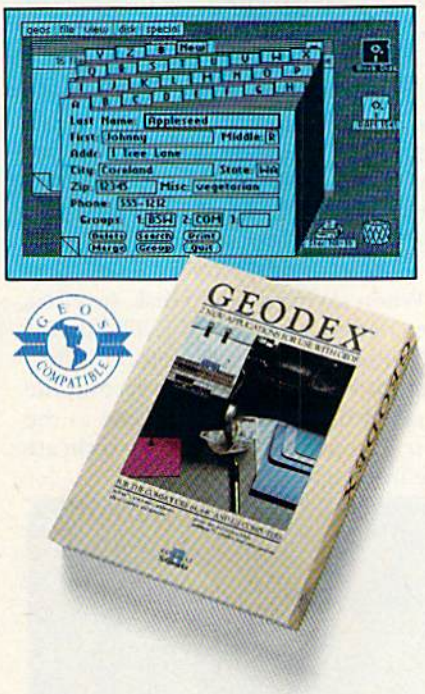


WRITER'S WORKSHOP $49.95

All the GEOS-compatible tools a writer needs, including geoWrite 2.0 with headers, footers and features to justify, center, search and replace text. Includes a Text Grabber (for converting text from programs like Paper Clip™), geoMerge and LaserWriter printing capability.

GEODEX $39.95

The GEOS-compatible directory that allows you to create lists by name, address, phone number, etc. Includes geoMerge to customize form letters and invitations.



GEOPRINT CABLE $39.95

The six-foot cable that speeds up printing because it's parallel—not serial. Connects easily to Commodores with fewer wires and no interface box.

To order call 1-800-443-0100 ext. 234
(California residents add 7% sales tax.)
$2.50 US/$5.50 Foreign for shipping and handling. Allow six weeks for delivery.

Commodore and Commodore C64 are trademarks of Commodore Electronics, Ltd. GEOS, geoWrite, geoPaint, geoCalc, geoDex, geoMerge, geoFile, Deskpack I, Fontpack I, Writer's Workshop and Berkeley Softworks are tradenames of Berkeley Softworks. Print Shop, Newsroom, Print Master, and Paper Clip are tradenames of companies other than Berkeley Softworks.

Sooner or later, you're going to discover that there's more to Commodores than fun and games.

You're going to discover power.

Not the kind of power that blasts aliens out of the galaxy. But the kind that whips through boatloads of data in seconds. The kind that crunches numbers and drafts documents like child's play.

The kind you find in GEOS.

Every GEOS application can take your Commodore from "mastering the universe" to a university master's degree, with all kinds of advanced capabilities that function at hyper-speeds you never imagined possible.

So if you're tired of toying with technology, try playing around with GEOS. Once you feel its power, you'll know that for anyone who still thinks Commodores are toys, the game's over.

Berkeley Softworks

The brightest minds are working at Berkeley.

Circle 134 on Reader Service card.

Software Gallery

From p. 20.

removing injured players; calling, accepting or declining penalties; and going into sudden-death overtime.

The documentation is good, telling you how to control the game and, after a summary of some of the best Super Bowl games, leaving you alone to play. Although the graphics are excusable, the sound leaves a lot to be desired. It's limited to crowd noise, which seems as if it's been issued from a static generator.

Oh, well, you didn't come for the noise anyway. Turn down the volume, pop open a can of something cold and enjoy the game! *(Avalon Hill Game Co., 4517 Hartford Road, Baltimore, MD 21214. C-64/$35 disk.)*

Ervin Bobo
St. Peters, MO

Fleet Filer

A

The Search for An Integrated Database And Word Processor Is Over!

Fleet Systems II and III fans will be glad to hear that their already good word processor has just gotten better. The manufacturers of Fleet System, Professional Software, Inc., have released a compatible database program called Fleet Filer.

I speak as one who has suffered the time-consuming agony of manually entering multiple lists into word processors. I can also attest to the fact that the properly executed integration of a database with a word processor greatly increases the usefulness of both programs.

Two separate programs—an 80-column C-128 database and a C-64 database—that possess identical menu options are included in this single-disk software package. The files created by the C-64 version can be used in the C-128 version and vice versa.

Nearly every aspect of Fleet Filer, from its easy-to-use design to its informative user's guide, is uncomplicated and straightforward for both experienced and inexperienced database users. One option missing from many less sophisticated databases is the use of commas and colons in field data.

Both versions possess one of the fastest record-scanning capabilities I've seen, but they lack a jump command in Record Viewing mode, so there's no easy way to move to a particular record number. Also, while you can scan forward and backward through your records, Fleet Filer doesn't return you to the beginning of the file when you reach the last record. I found that I could circumvent this problem by exiting to the main menu and scanning from the beginning of the records.

One weakness in designing record formats is evident. If, for example, you've entered the titles of the seven fields that constitute a particular record format, then decide to add an eighth field, you can't do so without entering the names of fields 1 through 8. Field names can be up to 20 characters long, so this could result in quite a lot of typing.

When saving a file to disk, two files are created automatically. The first is identified as a data file on the directory with the suffix .d. The second file is saved under the same name as the first, except it has a .i suffix to indicate the information format.

Main menu screen from Fleet Filer.

When printing, you can create various formats for your output. After selecting a print option, just answer the prompts specifying the size—one to six lines—and the spacing of your printout. You can then configure each printed line to contain whatever fields you desire. Fleet Filer works perfectly with continuous labels, as you can set the spacing between any size label.

Incorporating the files you create into the Fleet System II word processor is relatively painless. The data files created with Fleet Filer are in Commodore ASCII. After you load them into your word processor, they appear on the screen in the same format as you used to save them. Also, the files are, for the most part, compatible with the RUN Script word processor. You simply place a return after the graphics character Fleet Systems II and III use for a return symbol.

While Fleet Filer is an improvement for Fleet System II, it makes Fleet System III exceptionally versatile. With the added ability to incorporate records and lists into your word processing files, Fleet Filer is a worthy addition for all Fleet System users. *(Professional Software, Inc., 51 Fremont St., Needham, MA 02194. C-64, C-128/$39.95 disk.)*

Tim Walsh
***RUN* Staff**

Jane

B

This Super Secretary Gives You Three Applications in One.

Just as the readers with Dick, Jane and Spot taught millions of kids how to read, so Commodore's Jane is easing C-128 owners into a new era of applications software. Jane is a word processor, a spreadsheet and a filing system, all on a single disk.

Like those readers, Jane is simple. Even if you don't know a spreadsheet from a database, this program will make you glad you bought a computer.

The Commodore package contains three color-coded disks and a user's manual, but don't even bother with the instructions. Just plug your joystick or mouse into port 2, pop the applications disk into the drive and turn on your computer. Jane loads automatically.

You'll see a screen full of icons—graphics characters that represent the functions Jane is ready to perform. If you're just learning and want some assistance, many of the help screens feature animated demonstrations.

Clicking the pointer over the file cabinet moves you to JaneList. As soon as the JaneList screen comes up, you're ready to enter data. There's no need to construct records and define fields—you don't even have to know what they are.

JaneList is organized like a file drawer full of index cards. You just select one of the eight empty lists and begin filling in the blanks. If you wish to organize data in a unique fashion, ignore the existing formats and design your own special list.

Retrieving your records, controlled through another set of icons at the bottom of the screen, is also quite simple. JaneList will sort and search for information and display it or send it to the printer. Printouts are limited to three formats—mailing labels, parts of lists or individual file cards.

If you find yourself becoming infatuated with this charmingly easy software, it's time to point out that Jane isn't perfect. For instance, I occasionally was frustrated by the disappearance of the little tool that moves across the screen in response to the joystick. It didn't take long to realize that I was inadvertently moving it off the screen and burying it under the border of my monitor—an unnecessary nuisance.

There's a good chance you'll spend most of your time with JaneWrite, the word processing part of the program. Once you name the document on which you wish to work, you can begin entering text. This probably will be the first time you realize that Jane runs on the 40-column side of your C-128.

If the side-scrolling screen doesn't let you see enough of your letter, you can change to a 64- or 80-column display. Unfortunately, the 80-column characters are difficult to read. You might want to enter and edit in 40 columns and switch to 80 to check the layout.

JaneWrite lets you automatically indent paragraphs. You also can reformat individual lines, as well as cut, paste and copy. All of these operations are carried out by swapping the pointer for scissors, camera or glue and clicking the joystick button. With JaneWrite, you can change printer font and type size at any time, even in midword.

Finally, there's a spreadsheet for those who've never used one —JaneCalc. Entering formulas is a snap because Jane does all the work. All you do is click the pointer over the cells you wish to include. Even complicated calculations are entered with ease.

JaneCalc is slow and relatively small, however, and it allows only eight-column cells and a maximum of two decimal places. Like JaneWrite, it's difficult to read in the 80-column mode. It can also be difficult to use with only 40 columns displayed because the labels scroll off the screen. Without any shading to define the rows and columns, it's easy to get lost in the program. These shortcomings are obvious to anyone who's familiar with spreadsheets, but it's only a minor inconvenience for someone who's a newcomer to this particular application.

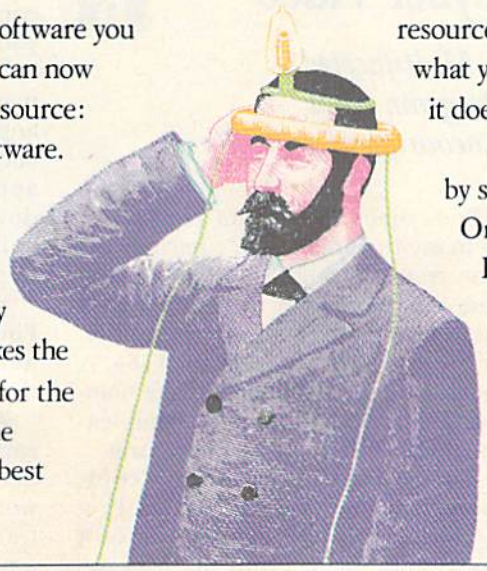
Getting to know Jane unveils some other flaws that aren't as easily ignored. The printer routines are slow, and it's necessary to end a spreadsheet printout manually, unless you are willing to wait while Jane wastes time and paper printing empty cells. The program's biggest flaw is its failure to take full advantage of the C-128's 80-column screen. You must squint to see what the hardware is capable of displaying clearly.

Still and all, this program is a must for beginners of all ages. Even if you

If you feel like a lost soul when it comes to music software, get the bible.

Almost every bit of music software you could possibly want or need can now be found in a unique single source: Coda, the bible of music software.

Detailing over 500 items which range from software to accessories to books, Coda is a remarkably user-friendly catalog that takes the confusion out of searching for the right music software. It's the computer-using musician's best resource today. In fact, if you can't find what you need in Coda, chances are it doesn't exist.



Order Coda today for only $4.00, by simply calling the number below. Or write to: Wenger Corp., 555 Park Drive, Dept. R2, Owatonna, MN 55060. It's not only inspirational, it's divine guidance.

Coda. 1-800-843-1337.
All major credit cards accepted.
Or call collect 1-507-451-1951.

Circle 86 on Reader Service card.

learned to read without Dick, Jane and Spot, Commodore's Jane will teach you a lot about what you can do with your C-128. *(Commodore Business Machines, Inc., 1200 Wilson Drive, West Chester, PA 19380. C-128/$49.95 disk.)*

John Premack
Lexington, MA

Speed King

C

High-Speed Racing At a Low Price

If you're partial to decent software at bargain prices, Mastertronic's Speed King should look very attractive to you. But if you're the type who craves innovation and state-of-the-art programming in your computer games, Speed King won't be very appealing.

Price is the first thing most Commodore owners notice about Speed King. Few new software programs sell for less than ten dollars. But once that price tag catches your eye, it's only natural to wonder what you're getting for your money.

The answer is a middle-of-the-road version of a very common type of computer game—a motor racing simulation. In this case, the player races a motorcycle around one of ten famous racetracks. The player can also pick from three different skill levels and two-, four- or six-lap races. All the races feature competition against 19 other riders, but one option permits players to make a practice run with no one else on the track.

Your motorcycle appears at the bottom of the monitor near the center of the screen. Using either a joystick or the keyboard, you can shift gears, change direction and lean the cycle left or right to make it stay on course as the winding track scrolls continuously toward you. Superimposed over the sky at the top of the screen is information stating your position on the track in relation to the other competitors, your speed, the elapsed time, your fastest lap run and the gear your bike is in. There are six gears, each of which corresponds to a speed range. You obtain the fastest lap times by being in the appropriate gear for the situation.

Like most such games, the object of Speed King is to stay on track, avoid collisions with other competitors and finish in front of the pack. You'll take a spill whenever you run into another biker or run off the track, and you'll lose valuable time in the process.

There's not much more to Speed King than that. Its best features are its price, its multiple play options and the challenge of shifting gears to achieve top performance.

Speed King's biggest drawbacks are its graphics and control response. The graphics aren't much better than what was available for the first home video games and are primitive compared to what's currently available for the C-64. Images are very blocky, and although each track has its own distinctive background, that background fails to get larger as your bike moves toward it—which, of course, hurts the illusion of movement. Control response is sloppy. Gear shifting is balky, and avoiding another cyclist is sometimes difficult because your bike won't turn as quickly or smoothly as you might like.

In determining whether to purchase this program, you must decide whether Speed King's attractive price is worth overlooking the shortcomings. *(Mastertronic International, Inc., 7311B Grove Road, Frederick, MD 21701. C-64/$9.95 disk.)*

Scott Wasser
Wilkes-Barre, PA

Cyber Video

B-

A Multifaceted Program That Encourages Creativity

Sometimes a program consists of so many features that it's hard to decide which to highlight first. In the case of Cyber Video, three integrated modules allow easy access to graphics, music and animation on the C-64. A quick look through the 92-page manual will convince you of the complexity of Cyber Video's many features.

The Cyber Video disk isn't copy-protected, allowing easy backup. Protection is provided in the form of a dongle that comes with the package and must be inserted in the joystick port for proper operation. Cyber Video also requires a KoalaPad, formerly manufactured by a company that has since sold out. The Commodore mouse should work with future versions of the program, according to Cyber Video's creators.

The music module is the program's *piece de resistance*. A minicourse in music theory makes composing quite easy. The main workspace of the music module is composed of three musical staffs, one for each of the C-64's voices. Notes, time signatures, rests and other musical notations are displayed at the top of the screen. You can move them to any point on the staff. There's even a cut-and-paste-type editor that allows you to maneuver sections of your composition. The major drawback is that you can move notes only on the same staff, not from one staff to another.

Other screens let you select from a group of preprogrammed musical voices—everything from guitar to piano sounds. You can also create custom instruments. Disappointingly, you can't print your composition with Cyber Video; you can display it only on the screen.

The graphics section uses bit-mapped, high-resolution graphics. You can have a 0 or 1 at each point in the graphics map. It's possible to specify color only down to the size of a regular text character. That means that within a standard-size block, you can have only two colors—one represented by the zeros and the other by the ones within that block. Other programs use this mode, but if you aren't familiar with it, you might become confused as you try to create your image.

Standard features in the Draw command permit you to create lines, rectangles and circles with ease. All the choices, including selection of colors, appear in the form of drop-down windows. I found it very difficult to paint in this fashion, rather than being able to point at the color I wanted.

You can choose between Normal and Fine Drawing modes. I found the resolution in both modes to be superior to those in several other programs.

Zoom mode lets you enlarge a small section of your picture for more detailed work. Two screens let you work on several pictures at once and transfer between the two. There's also a pan option that lets you move hor-

izontally between two pictures.

Cyber Video includes the ability to create and edit sprites. There's a lot of flexibility here, but, unfortunately, I found the documentation for using this capability incomplete.

The Animation module is the most notable section of Cyber Video. Animation can consist of a simple sequential slide show or more complex things such as alternating between two graphics screens or having geometric images drawn on the screen as other things take place simultaneously. I spent nearly eight hours trying to master just the basics by using the examples contained in the instruction manual and had only moderate success. The same detail and effort present in the instructions for the Music module should be incorporated into the animation and graphics sections.

The demonstration disk includes some excellent examples of the program's capabilities. The combination of graphics, motion and music is very impressive. A utility program called Cyber Run lets you show animation without having Cyber Video loaded or a KoalaPad or dongle present.

Cyber Video is packed full of features and undoubtedly represents a good dollar value. The second half of the documentation, however, needs some serious revision. *(Touchstone, PO Box 1378, Coeur d'Alene, ID 83814. C-64/$39.95 disk.)*

Jim Grubbs
Springfield, IL

World Games

A-

Experience the Thrill Of Victory and The Agony of Defeat

Epyx' World Games is a smashing sequel to that company's software series, Summer Games I and II and Winter Games.

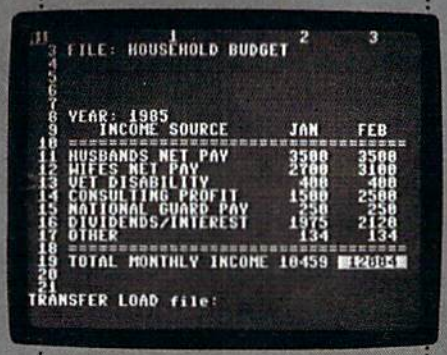
You might be aware that the first three games are computer versions of Olympic contests such as pole-vaulting, fencing and figure skating. The programs are realistic sports simulations distinguished by challenging game play and fabulous graphics.

World Games features more of the same. It picks up where the Olympic simulations left off by offering eight more sports, each peculiar to a different country, and an attention to subtle detail that gives it a rich character and flavor all its own. You can go cliff diving in Mexico, logrolling in Canada, weight lifting in the Soviet Union, sumo wrestling in Japan, barrel jumping in Germany, slalom skiing in France, caber tossing in Scotland and bull riding in the good ol' U.S.A.

In the weight-lifting event, good timing and strategy enable you to lift the most weight, but remember that the heavier your load, the slicker your joystick jockeying will have to be. While you're trying to master the moves, take note of the particulars: You can hear your on-screen character take a few deep breaths, see him flex his fingers and grimace, and watch his face turn red and purple while hoisting the heavy steel.

The idea behind barrel jumping is to build up speed by moving the joystick back and forth, then leap at just

POWERFUL ENOUGH TO COMPUTE OUR NATIONAL DEBT. YET IT COSTS SO MUCH LESS.



Allow us to introduce the most powerful electronic spreadsheet in the Commodore world.

Multiplan.®

This is the same intensely simple, staggeringly brilliant program over a million Apple and IBM owners count on.

And now it will count for you, on any 64 or 128.

Ironically, however, though we recently lowered the price of Multiplan, we actually increased its capabilities.

The enhanced version not only takes full advantage of the 128's expanded memory and 80 column screen.

Not only includes a *Quickstart* instruction manual.

And not only comes with 10 ready-to-go templates.

But it is the fastest loading spreadsheet you can buy. Which means in mere seconds you can check your checkbook. Take stock of your stocks. Or calculate your risks.

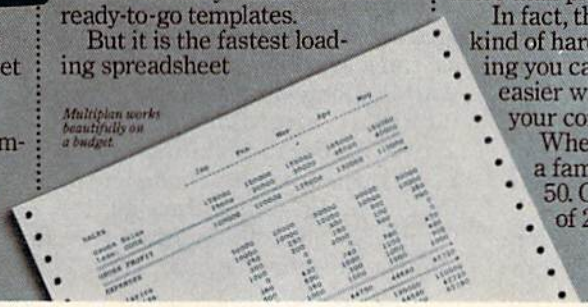
You can plan, budget, analyze, question, ponder, revise, estimate and forecast.

Just by doing little more than pressing a few keys.

In fact, there really isn't any kind of hardcore number crunching you can't do faster and easier with Multiplan at your control.

Whether you're managing a family of 4. A business of 50. Or a nation of 250 million.

Multiplan and Microsoft are registered trademarks of Microsoft Corp.



EPYX®

the right moment. The graphics are superb, particularly the ice-skating motion, which looks more like a film than a computer image. Also pay attention to the skater's reaction as the number of barrels to be jumped increases.

The more guts you have, the higher the altitude from which you'll want to leap in cliff diving. While the graphics and sound are superb in this event, the action isn't very intriguing. Scores are determined by a diver's form, but there simply isn't a lot you can do with the joystick to make one dive better than another.

Like all the other World Games events, you view slalom skiing from the same perspective you'd have if you were watching it on television. The best thing about this event is the way it conveys the feeling of skiing: Sharp turns slow you down, and keeping your skis pointed downhill for too long will result in uncontrollable speed.

Logrolling is the simplest event and also quite boring. You must try to stay afloat by moving the joystick back and forth to keep the log rolling at a steady pace. You probably won't want to spend much time on this event, unless it's to see the expressions on the lumberjacks' faces when they take a plunge.

Every aspect of bull riding is first rate, from the challenging technique required to stay on board a bucking bull to the cowboy's reaction when he's finally thrown. An interesting feature allows another person to control the bull with a second joystick, giving you a chance to break in your boots slowly.

The caber toss comes right from the Scottish Highland Games. As its name suggests, the object is to toss a caber—a small tree trunk—farther than anyone else. In World Games, cabers look more like sawed-off telephone poles, but doing well at this event does take coordination.

The most difficult event to master, because of a choice of 11 different moves, is sumo wrestling. Each technique is determined by the position of the joystick and whether the fire-button is depressed.

World Games has useful options that let you participate in all or some events, practice a given event until you master it, use one or two joysticks, and play against the computer or against as many as seven human foes. The program also keeps track of medal winners to determine a grand champion and saves record-setting performances for posterity.

Epyx deserves praise for including a built-in fast loader that gets World Games running on a 1541 drive in seconds rather than minutes. The fast loader gives you more time to enjoy the latest entry in one of the best action/strategy computer games around. *(Epyx, 600 Galveston Drive, Redwood City, CA 94063. C-64/$39.95 disk.)*

Scott Wasser
Wilkes-Barre, PA

Marble Madness C+

Get Ready To Turn Your Computer Room Into an Arcade Parlor

Designed around the premise that losing your marbles can be fun, Marble Madness made the arcade parlor scene some months ago. It proved such a hit that Electronic Arts released a home computer version.

Out of the game room and onto your screen with Marble Madness.

Now you can challenge the clock or another player for high-score honors as you bash, blast and carom your marble along the same five far-out, futuristic courses as the original plus a new, Commodore-only, Secret Level. But convoluted curves and multiple routing—often through Rube Goldberg tubes, lifts and wave machines—are only half the story. The courses are infested with baddies such as Munchers, Steelies and Hoovers, all determined to see that you never finish. Sometimes, as in the Silly Level, even the physics becomes unglued!

All the contests begin at the first course, Level 1, with on-screen countdown timers set for about one minute of race time. Points are scored for feats such as sending a Steelie over the edge, but most come from multiplying seconds left on your timer at the finish.

In a two-player game, bonus time for the next course is awarded to the player who finishes first. You must, however, reach the goal before your timer goes to zero; otherwise your game is over.

Players have unlimited marbles, but losing one costs time, as it usually is replaced at the beginning of the current passage or obstacle. Similarly, scrolling of the multiscreen courses naturally tracks the leader's marble. A second player who lags too far behind will be jumped forward to stay on the display, but he or she is penalized several precious seconds.

Boasting attractive 3-D graphics, Marble Madness is a good game rescued from greatness by some unfortunate design choices. Instead of sharp, distinctive colliding and rolling sounds, you get barely audible knocking effects and loud background music. There's a ten-position High Rollers display, but it's not saved. When you turn off the computer, any unbelievably high score becomes just that—unbelievable.

The game's main weakness stems from its being a direct translation fresh from the arcade. Arrangements that require success on course A before going on to course B, and things such as short countdowns, conspire to provide very little playing time.

Most of the courses are very tough, and many would-be marble mavens will end up running the same lower-level courses over and over. There's no time for them to explore the numerous fascinating features of the landscape, engage in extended bashing duels or experiment with alternate routes. Marble Madness is fun reserved for the arcade elite. *(Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$29.95 disk.)*

Jeff Hurlburt
Houston, TX ■

IS GETTING THE ANSWER TO SOFTWARE PROBLEMS A BIGGER PROBLEM THAN THE PROBLEM?

Don't stay on hold when there's help online from CompuServe® Software Forums.

The new upgraded version of your software locks up. And every time you reboot, you get stuck in the same place in the program.

You've chucked the manual, because you've done exactly what it tells you to do six times already. So you call the software company.

Now you spend half a day beating your head against a brick wall of busy signals, ranting at recorded messages, hanging around on hold. And you still don't get the solution to your problem.

Meanwhile, progress is stopped and your profits are dribbling away. But wait. There's help...

Several prominent, progressive software publishers recognize this problem, and working with CompuServe, have developed a solution—CompuServe Software Forums.

Now you can go online with experts from the companies that produced your software and get prompt, written answers to your specific problems. You can even talk with the actual software developers.

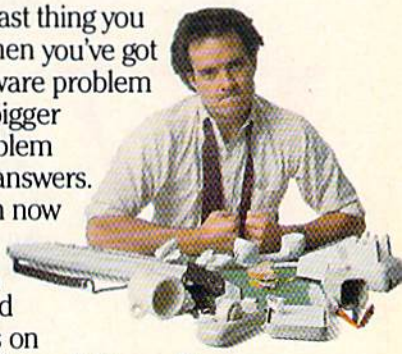
Aldus,® Ashton-Tate,® Autodesk,® Borland International,® Creative Solutions,® Digital Research,® Living Videotext,® Lotus® Inc., Microsoft,® MicroPro,® Misosys Inc.® and Software Publishing® all have CompuServe Software Forums. And we keep adding more.

CompuServe's large subscriber base also puts you in touch with thousands of other, often more experienced, users of the same software. You'll find they can give you lots of creative ways to get the most out of your software.

And software forums are the best way to learn about product updates, new product announcements, new ways to expand the uses of your software, and offer free uploads of your own programs.

Our online electronic magazines frequently publish software reviews. And you can find help for many other software products in our other computer-related forums for IBM,® Tandy,® Atari,® Apple,® Commodore,® TI® and others.

The last thing you need when you've got a software problem is a bigger problem getting answers. So, from now on, get prompt, informed answers on CompuServe Software Forums.



To buy your CompuServe Subscription Kit, see your nearest computer dealer. Suggested retail price is $39.95.

To order direct or for more information, call 800-848-8199 (in Ohio, 614-457-0802).

If you're already a CompuServe subscriber, just type GO SOFTWARE at any ! prompt.

CompuServe®

Information Services, P.O. Box 20212
5000 Arlington Centre Blvd., Columbus, OH 43220

An H&R Block Company

Circle 64 on Reader Service card.

DIGITIZING THE VIDEO CONNECTION

Enhanced computer art is at your fingertips with the three programs reviewed here.

By ERVIN BOBO

Whether you realize it or not, digitizers are everywhere. Remember those spectacular fly-by photos of Saturn that appeared in *Time* magazine last year? Before the photos were printed, they were digits in a computer. And when you stop at the mall to have your likeness printed on a T-shirt, you're seeing a digitizer at work.

What might come as an even bigger surprise is that easy-to-use digitizers are available for the C-64, offering you an entirely new source of computer graphics images.

You can use digitized images of family and friends in greeting cards, posters and newsletters; you can enhance them to use as original computer art; you can even transmit them by modem to help you become better acquainted with on-line friends. And, as an added advantage, you can enrich your overall computing experience as you learn some of the ways graphics are produced.

Video Acquisition

Before an image can be digitized, it must be acquired by the computer. For this reason, digitizers are more properly called video acquisition (VA) systems. Video acquisition is the process of putting a video signal into a computer and then digitizing that signal (in effect, reducing it to bits that are either on or off) in such a way that it can be filed on a disk, displayed on your monitor or sent to a graphics printer. In the last case, the acquired image can be saved in formats recognized and used by several popular graphics programs.

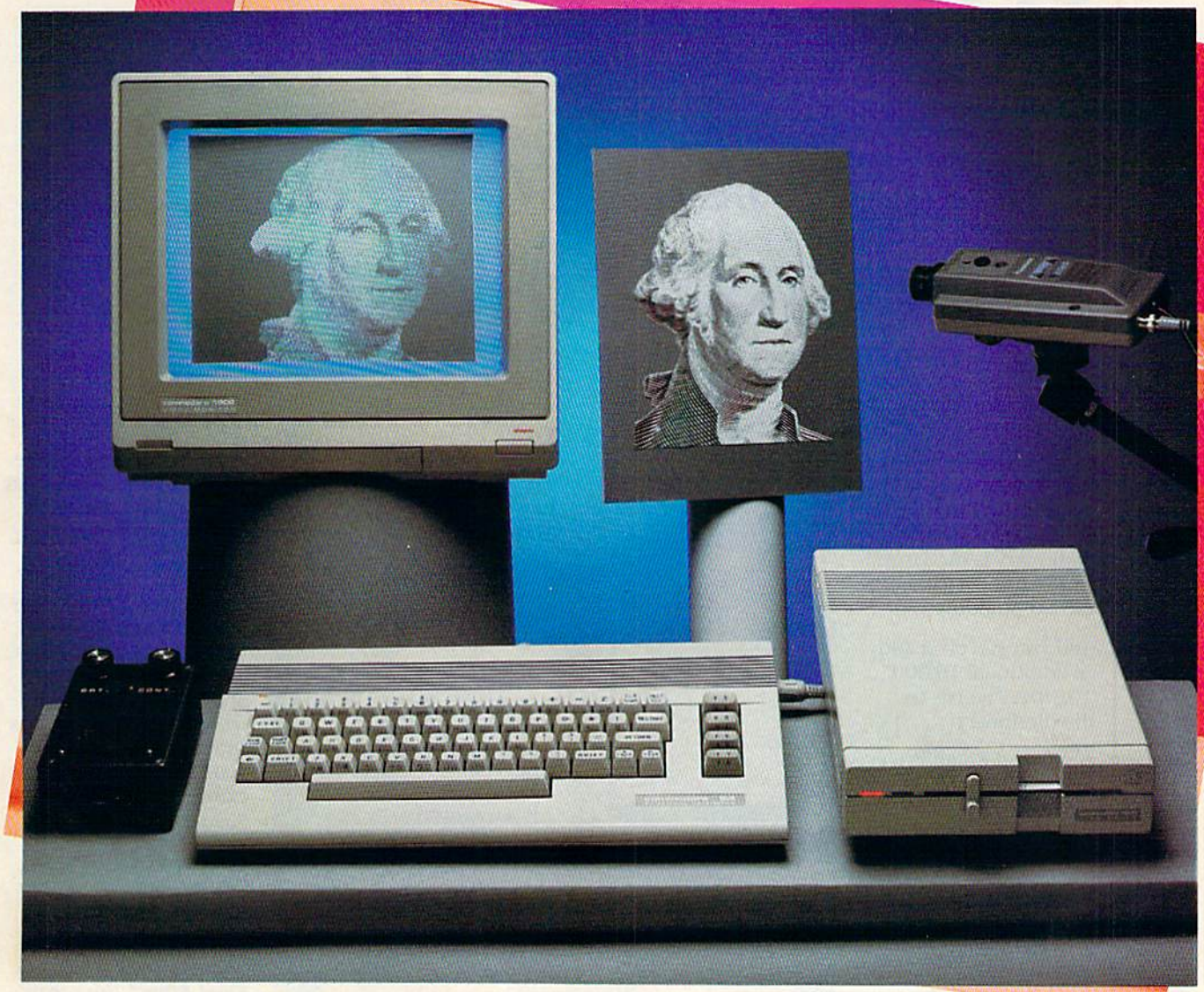
The ability to interact with creative graphics software such as Doodle!, Print Shop and Blazing Paddles is the most valuable aspect of VA systems. After all, you can only print your own image on a T-shirt so many times before you get tired of it—or find a shopping mall where you can start your own business.

With graphics software, you can use your digitized images as you would any other image in a dedicated disk library. Use a photo as clip art in Newsroom to illustrate your lead story; enhance or alter the image with Print Shop's graphics editor and use it to illustrate your letterhead or a greeting card; bring it into Doodle! or Blazing Paddles, add color or some other graphics enhancements, and present it as an example of computer art.

Because you'll be working with images of real people and objects, your creations will have a more personal touch, not to mention greater perspective. Anyone can send your Aunt Martha a Print Shop card illustrated with a line drawing of a dog, but only you can send one that has a digitized image of her favorite poodle.

Input Devices

Neither your computer nor your VA system cares about the origin of the input (a



Digitize me! George is all set up to be transformed into a digital image with the help of your computer system, video camera (right) and interface (left), which connects the camera to the computer.

video signal), as long as the signal is of the composite (NTSC standard) variety. Some video cameras send out a composite signal, while other signals must be converted into a composite signal. When no converter is available, a portable VCR will work fine. You can also use another computer as the source.

The converter device is a transformer that becomes a power supply for the video camera. Once popular as a means of connecting cameras to console VCRs, converters have been largely replaced by portable VCRs. Should you locate a converter, expect to pay $40 to $50 for it.

A VCR alone can be the source of an image if you have a good freeze-frame feature.

PHOTOGRAPHED BY LARRY DUNN

INTRODUCING...
Four ways to address your software needs.

One's Really Simple.

Fleet System 2™ is so user friendly beginners can start typing documents in minutes! The integrated 90,000 word dictionary is the largest and fastest available on the Commodore 64.

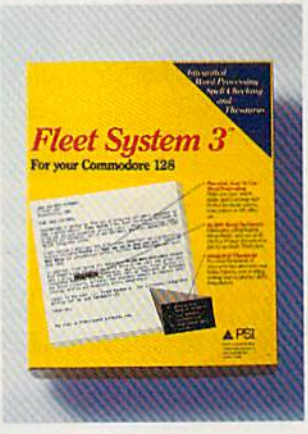
And you can even add an additional 10,000 *"Custom"* words to the dictionary.

Suggested Retail Price: $59.95

One's Really Integrated.

Fleet System 3™ the user friendly software package for the Commodore 128 includes an integrated 90,000 word dictionary, On-Screen Help Windows, a "Preview" function so **"What You See Is What You Get"**. There's also an integrated Thesaurus that provides thousands of synonyms and antonyms and will help improve your writing and vocabulary skills instantly!

Suggested Retail Price: $69.95



One's the Ultimate.

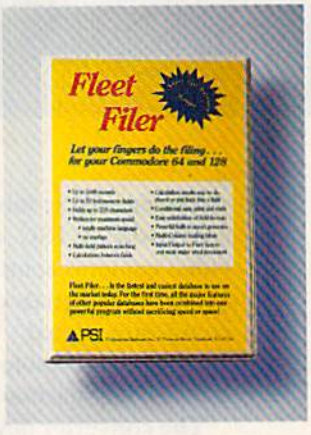
Fleet System 4™ is our all new ultimate, integrated writing tool that works on the Commodore 128 and combines four powerful applications into one package. It has everything you'd find in ***Fleet System 3***™ plus ***Fleet Filer***™, the database that puts information at your fingertips, in seconds!

Suggested Retail Price: $79.95

One's a Creator.

Fleet Filer™ can create anything from invitations to mailing lists. You have up to 5,000 records which can be sorted in ascending or decending order. You can even search according to logical criteria or search string. And we've saved the best for last... You can input and output to ***Fleet System 2***™, ***3***™, and ***4***™ files. *(And with most major word processors).* ***Fleet Filer***™ will work on Commodore 64/128 computers.

Suggested Retail Price: $39.95



Finally, software the way it ought to be.
Buy it and experience what over a quarter of a million Commodore users already believe in.

PSI

CALL 1-800-343-4074 for the Dealer nearest you!

Professional Software, Inc.
51 Fremont Street, Needham, MA 02194
(617) 444-5224

Fleet Systems 2, 3, 4 and Fleet Filer are designed and written by Visiontronics Group Inc. — Commodore 64 and 128 are trademarks of Commodore Electronics Ltd. Some printers may not support certain Fleet Systems 2, 3, 4 or Filer functions and/or require and RGB monitor. Please check with your dealer. Dealer and Distributor inquires are invited.

VA systems use a method of image construction comprising several scanning intervals. Each interval requires about six seconds, and the highest acquisition levels entail eight such scans. If you're thinking of digitizing something from MTV, forget it—unless you can freeze on a single, clear frame.

A videodisc player also can be used for input. LaserDiscs (such as those from Magnavox and Pioneer) are noted for excellent freeze frames. The CED videodisc (from RCA, Sears and others) freezes a single track, which is actually four frames. If you choose a scene with little or no movement, you can get a sharp, steady image.

Using a VCR or videodisc player as a source of digitized images will expand your creative horizons to include the world of entertainment. Lighting, subject matter and composition have been handled by Hollywood's best, and your only criterion for success is a sharp, frozen frame.

How about digitizing Ann-Margaret as she appeared in *Bye-Bye Birdie*? Or the drawn and determined face of Gary Cooper in *High Noon*? Although a one-time personal use of such images probably is permitted by law, you should check into possible copyright infringement before selling or distributing anything displaying such images.

Another common source of a composite video signal may surprise you. If you're a member of a two-computer family, you might consider your other computer as a source of signals to be sent to your C-64 by way of the VA system. As with a VCR, the picture must be still. When I tried using the Amiga computer as the source, however, I was unable to reduce the brightness enough to produce a detailed image.

I tested three VA systems for this article: Eye-Scan, ComputerEyes and Video Digitizer. All three systems consist of capture software and a hardware box that fits into the user port (not the game port) of your C-64.

Software

Eye-Scan has a single disk that acquires images and allows you to store them on disk in formats compatible with Doodle!, KoalaPad and Blazing Paddles. In addition, you can print directly from the disk or use the "slide show" feature to retrieve digitized images from your data disk and display them on the monitor.

The ComputerEyes software allows you to save an image to disk in a neutral format (you can store images as "packed" or "unpacked," with the packed version resulting in a smaller file). These images can be uploaded, downloaded or loaded into the Screen Magic section of Print Shop.

To use other graphics software, you must capture an image with an accessory program dedicated to a particular graphics program. Accessory programs currently available work with Print Shop, Doodle!, Newsroom and FlexiDraw. They are capable of performing the complete acquisition routine.

Video Digitizer has a single disk that lets you save images in standard format as well as in formats for Doodle!, Print Shop, KoalaPad and Newsroom. In addition, Video Digitizer lets you add color to a digitized image, although it might take some practice to color an image so it doesn't look surrealistic.

Hardware

The VA boxes for Eye-Scan and ComputerEyes each have two knobs, one to adjust signal synchronization and another to adjust brightness. The socket into which you plug your video source (whether it's a camera, VCR or videodisc player) is compatible with an RCA phono plug, the most common plug for composite video signals.

The Video Digitizer box is a bit different. It doesn't have a synchronization knob, but it does have a knob to adjust contrast.

Ease of Use

Although the form and function of the Eye-Scan and ComputerEyes menus are different, these two digitizers accomplish their aims in the same way. All functions are selected from the menu, and if you're familiar with one of the digitizers, you'll have no trouble operating the other.

Eye-Scan uses drop-down menus, much like those on an Amiga or GEOS, but more time-consuming, because you must abort one menu before pulling down the next. All the commands are invoked by the cursor-control and return keys.

Overall, ComputerEyes is the easiest digitizer to use. Its menu, which contains all the options available, is on-screen at all times, and selecting an option is merely a matter of pressing a single alphabetic or numeric key.

Video Digitizer is again a bit different, using a menu similar to that of ComputerEyes, but flipping to a second menu if you wish to add color to the image. Because the program is fast and lets you do your test scans at any video level (described below), Video Digitizer is the easiest to use in terms of arriving at a final image. Unfortunately, because you must assemble the

Video Digitizer, Eye-Scan, ComputerEyes and the camera.

VA box yourself, it appeals mostly to advanced users and tinkerers.

Setting Up the Digitizer

Before doing anything else, select the synchronization item from the menu and use the knob on the VA box to adjust it. (The Video Digitizer has automatic synchronization.) This ensures that your source and acquisition devices are not working at cross-purposes.

Next, adjust the image brightness. This is the most important step in the procedure, as well as the one most open to experimentation. Because it's an internal adjustment, having nothing to do with the brightness of your subject, you must adjust the brightness for all images, no matter what the source.

Brightness is the main determinant of your final product's appearance. Too much brightness will "burn out" some of the details, while too little will result in a digitized image composed solely of black pixels. Fortunately, all three programs allow for unlimited trial captures, allowing you to study many images before committing any to disk or to the printer.

During the brightness-adjustment phase, the image is presented in black and white (no gray scales). Your computer scans the subject about once every six seconds. Some "bleeding" of the image will occur, but this won't appear in the final form.

If you're using a video camera, you also make your focus adjustments at this time. If you're using a live subject, obtain a gray scale card (available at most photography stores) or a video color scale card to help avoid subject fatigue. The latter might be difficult to find unless you have a local supplier of professional video equipment.

Place the card where the subject will be positioned, and use it for focus and brightness adjustments. After each change in brightness, invoke the capture routine you'll be using. When the scans are complete, the digitized image will appear on your screen and stay there until you reject it, giving you ample time to decide whether more or less brightness is required.

Method of Capture

Capture routines consist of levels, probably best thought of as shades of gray. The image source is scanned, and the light and dark values are converted to bits (pixels) that are either on or off. White consists totally of bits that are on; light gray has many on bits; dark gray has fewer; and for black all bits are off.

Eye-Scan and ComputerEyes offer three methods of capture:

Normal—The image is black and white only; a single scan requires six seconds.
Level 4—Four scans result in an image with four density levels.
Level 8—Eight scans result in an image with eight density levels.

ComputerEyes offers some additional options on accessory disks. For the Doodle! format, the C-64 gray scale is used in the Low- and High-Contrast modes. The Low-Contrast mode uses four adjacent video levels, while High-Contrast makes eight scans and then uses four alternating levels to produce a greater separation between shades of gray. Although Doodle! can't print these two forms of capture, you can use them to produce an image closer to photographic quality. You can color or enhance the image, then resave it to disk.

With the Print Shop accessory disk, images must be converted to a graphics format. Alternatively, they can be captured in a direct graphics mode that scans quickly and produces an image in three shades: black, gray and white. Print Shop graphics images don't use the entire screen. A gray rectangle sets off the portion of the screen that will be stored and used.

You can alter images captured in this way with Print Shop's graphics editor and use them in place of the library graphics. Normally, a digitized image requires 37 blocks of storage space on a disk. Because Print Shop graphics images require less information, only three blocks are used.

Note that "standard" captures and saves made with all three programs can be loaded into Print Shop's Screen Magic option.

Video Digitizer allows capture in density levels 2 to 8 and every level in between. It's also fast. While the other programs require six seconds per scan (and one scan for every gray level chosen), Video Digitizer can produce an eight-level scan in just three seconds.

Further, while Eye-Scan and ComputerEyes do their brightness scanning only in the Normal (black-and-white) mode, Video Digitizer performs this routine in any mode you select, telling you instantly what your final result will be.

Although contrast is barely mentioned in the documentation, it's the second most important element in capturing usable images. Because your final product is composed of dot patterns of varying density, low contrast results in a more uniform density—eyes, hair and skin of almost the same shade of gray—making it difficult to distinguish all the different elements.

In video, contrast is the product of light, but I hasten to add that it has nothing to do with the brightness control on the VA hardware. Adding light heightens contrast, and the final result, all other things being equal, should be about 50 percent better. Video Digitizer does have a contrast knob on its VA box, but this is no substitute for light.

Using a video or photo lamp, you'll get your best results by skimming only the edge of the light beam across the subject—a technique photographers sometimes call feathering. This reduces the extra illumination so it won't overpower the camera.

The images generated by a color video camera have more contrast. This is because color cameras are traditionally not as sharp as black-and-white cameras, and most manufacturers make up for this by boosting the contrast.

For my tests, I used the black-and-white video camera marketed by ComputerEyes, along with a "low-light" color video camera with a Newvicon tube. Because of the inherent contrast in color cameras, results were better (probably about 25 percent) with the color camera I used, but both cameras worked better when I used a photolamp.

Daylight is a good alternative to conventional artificial light, although circumstances didn't allow me to test this. If you station your subject near a window on a sunny or bright, cloudy day, you'll get a better final image and print.

If you already own a color camera, use it. Rushing out to buy the "latest and greatest" probably will offer no substantial improvement, and purchasing a black-and-white camera as an addition will not help. If you have no camera, your choice will be between a less expensive black-and-white surveillance camera and a more costly (and contrasty) color camera.

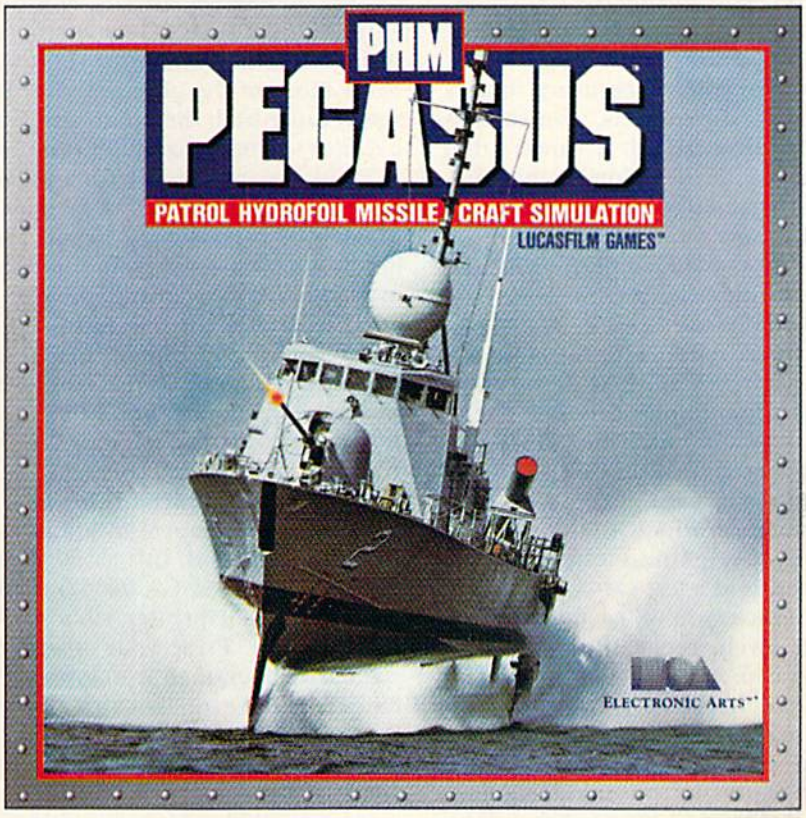
Most color cameras today have elec-

(Top Guns don't always fly on air . . . Some fly on water)

Warship of the Jet Age

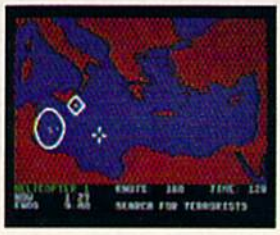
Red Alert!! Red Alert!!
0800 hours: Terrorists attack U.S. naval base off Sicily . . . Intelligence reports enemy missile corvettes fleeing toward Libya . . . Additional enemy patrol craft seen in area . . . Seek out and destroy . . . Take no prisoners . . .

The Need for Speed . . .
Your search helicopter spots the Soviet-built Nanuchka II missile corvette charging across the "Line of Death." Foilborne and closing in at 50 knots, you've got him in your sights. Guns blazing, you lock-on and launch a Harpoon guided missile. Through the water spouts of his near misses, you see him explode into flames. Another mission accomplished.



™ & © 1987 L.F.L.

The Patrol Hydrofoil Missilecraft.



So agile, enemy radar mistakes it for low-flying aircraft.

So fast, enemy forces have only minutes to react.

So deadly, there is no second chance.

A Commanding Simulation . . .

- Authentic speed and handling characteristics of three different NATO ally hydrofoils: U.S., Italian, and Israeli.
- Advanced instrumentation and weapons systems include: 76 mm water-cooled naval cannon, Exocet, Harpoon and Gabriel guided missiles, rapid blooming defensive chaff, radar indicator and damage control sensors.
- Full control of search helicopters and convoy ships.
- 8 real-life missions in today's danger zones like the Persian Gulf, the Eastern Mediterranean and the Gulf of Sidra.
- Time compression speeds action to 128x normal.
- Comprehensive operations manual includes mission briefings and enemy vessel spotter cards.
- Technical consultant: Boeing Marine Systems.

How to order: Visit your retailer, or call 800-245-4525 for direct VISA or Mastercard orders (In CA call 800-562-1112). The direct price is $29.95 for the Commodore version and $34.95 for the Apple II version. To buy by mail, send check or money order to Electronic Arts Direct Sales, P.O. Box 7530, San Mateo, CA 94403. Add $3 for shipping and handling ($5 Canadian). Please allow 4 weeks for delivery. Screen shots represent C64 version. Others may vary. Commodore and C64 are registered trademarks of Commodore Electronics Limited. Apple II is a registered trademark of Apple Computer, Inc. Lucasfilm Games, PHM Pegasus, and all elements of the game fantasy:™ & © 1987 Lucasfilm Ltd. (L.F.L.). All rights reserved. Electronic Arts, authorized user.

ELECTRONIC ARTS™

tronic viewfinders that make focusing and composition much easier. Surveillance cameras require no viewfinder. This results in a lower price, but you'll have to focus and compose by trial and error during the test scans.

What To Capture

Whether you're capturing images of live or static subjects, your camera must be on a tripod. A camera that moves even a little during the scanning process will produce a badly distorted image.

A VCR or videodisc player will hold a freeze frame long enough for the highest-level scan. Most VCRs can safely freeze a frame for five minutes. Even so, that might not be long enough for multiple trials, so it's helpful to have a monitor into which you can plug your VCR in case you need to reset the frame.

If you must work with live subjects, do all your brightness tests on a static object such as a test card or a copy of *RUN*. Once you've established the proper levels, replace the card with your subject—changing nothing else—and if you're lucky, you'll get your image in one pass.

Two caveats are necessary when you're capturing photos. First, prolonged exposure to a photolamp's heat can damage a photograph or cause it to begin curling. Use a copy of *RUN* to get in the brightness ballpark, then tape the photograph to whatever you're using for an easel.

The second caveat concerns the vagaries of Doodle!. This program introduces some proportional distortion in the printed image. If you choose the standard print, the distortion is high. You can control distortion on a double-size print by capturing the image sideways. Either turn a vertical print on its side or turn the video camera 90 degrees off-axis. Not only will this produce a less distorted print, but it also will allow you to include more of the photo in your image because both the photo and your monitor will be horizontally oriented.

Think big in deciding what to capture. Since none of the VA systems is capable of reproducing detail, your best results will come from what photographers call a strong subject: A face is better than the entire body, and a can of beer is better than a six-pack. Large, simple images work well; small, detailed images do not.

What Do I Do with It?

Print it on a T-shirt, of course!

Actually, that's not as facetious as it sounds. Diversions, Inc. (1550 Winding Way, Belmont, CA 94002) manufactures special printer ribbons for this purpose. Print your image on standard paper, then iron it onto the fabric. Foto-Wear!, Inc. (62 Herbert Drive, East Brunswick, NJ 08816) takes the opposite approach. It sells a special paper for iron-on transfers that presumably can be used in any printer with a standard ribbon. You'll find that either method is preferable to stuffing your T-shirt into your printer.

Or use one of the graphics programs to modify the image. When using images from Doodle!, I found that I could use all the tools to modify the digitized image—including color. Note that modifying or erasing only the background sometimes enhances an otherwise flat image.

Don't overlook the fact that images printed with Blazing Paddles, Koala-Pad or Doodle! can be printed in black and white and then colored by hand. A good eight-level image, with a variety of shadings, can guide you in much the same way a paint-by-number kit does.

Print your next issue of Newsroom using digitized photographs instead of line art, or mix the two styles. Use Print Shop to print your own captured images instead of those in the Print Shop library. QuantumLink users can upload their own digitized photos and biographies and download those posted by other members.

If you print through one of the dedicated graphics programs, the VA systems themselves have no printer support. If your printer works with any of the programs mentioned, that's fine. But if you don't yet own any of these programs, check for compatibility with your printer or printer/interface combination before buying one.

A Final Word

As I mentioned before, installing the three VA systems is easy, requiring only a few minutes. Although setting up each shot takes time, being able to make adjustments is better than having a nonadjustable system that works only half the time or only on some subjects.

Most of the documentation is comprehensible, although there are some holes in it (for instance, documents for Eye-Scan are on the disk, but they can be printed or called up as Help files). Some of the shortcomings are understandable: In a process that involves video, photography and computers, not every situation is predictable. I hope the information I've provided will help solve most of your problems.

Video acquisition and digitizing is here to stay. Both open new avenues for your computer, providing you with opportunities you can enjoy as leisure activities or perhaps turn into money-making ventures.■

Ervin Bobo is a free-lance writer and columnist for the Commodore and Amiga computers, and a former videographer. Address all correspondence to him at 23 St. Lawrence, St. Peters, MO 63376.

The Bottom Line

Eye-Scan comes in a kit containing the VA box and capture software. It costs $89.95 and is available from Digital Engineering, 2718 SW Kelly, Suite C165, Portland, OR 97201.

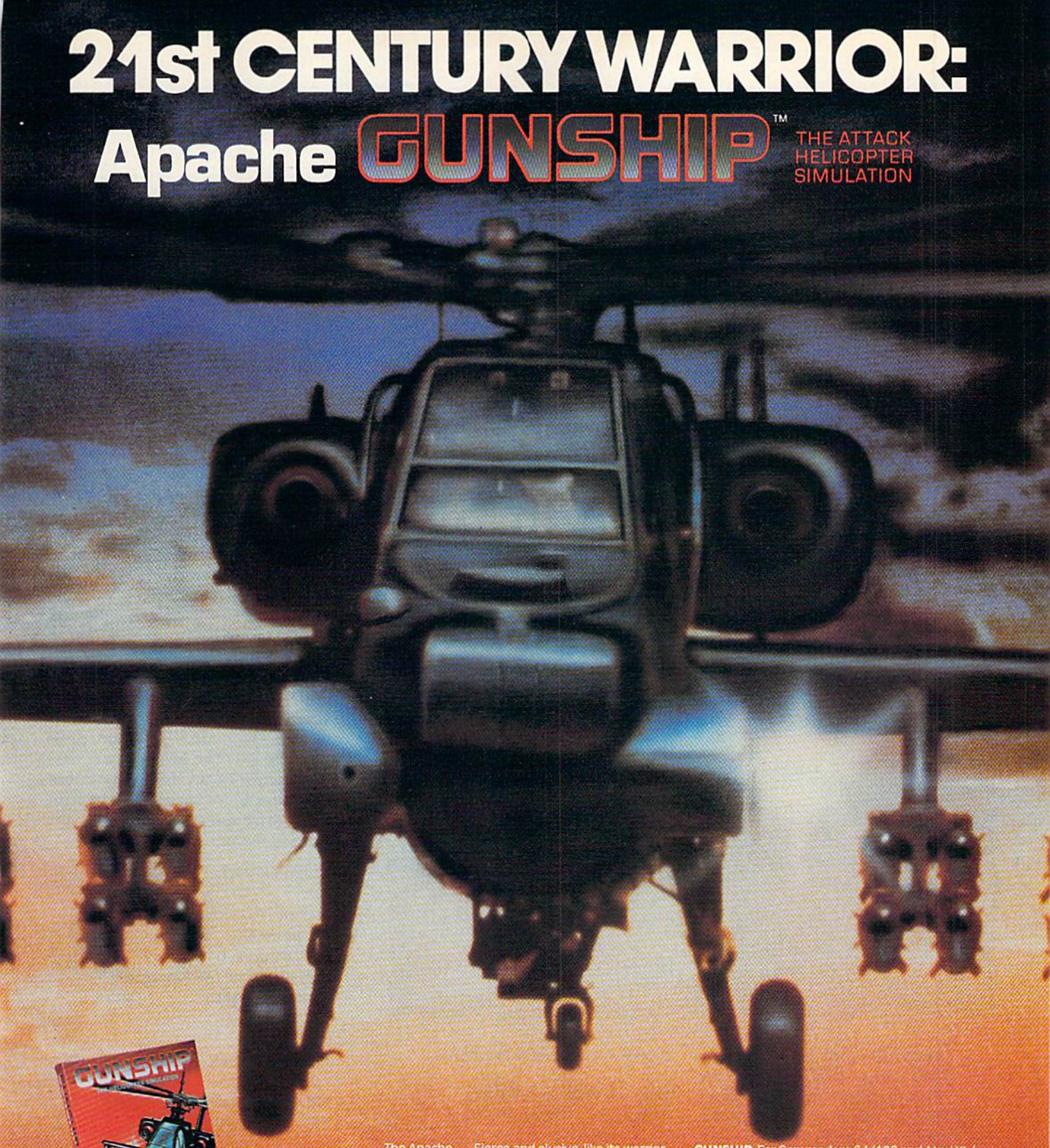
ComputerEyes also contains the VA box and basic capture software. It costs $129.95. A deluxe kit containing a Panasonic black-and-white video surveillance camera (with a built-in power supply and converter) costs $459. Both ComputerEyes kits are available from Digital Vision, Inc., 14 Oak St., Suite 2, Needham, MA 02192.

Video Digitizer is less expensive than Eye-Scan and ComputerEyes, but you have to assemble the VA box yourself. The kit costs $39.95 and comes with a printed circuit board, schematics, a parts list, and the capture software. Parts necessary to complete the VA box are available at electronics stores for about $25. Video Digitizer is available from Kinney Software, 121 North Hampton Road, Donnelsville, OH 45319.

21st CENTURY WARRIOR:

Apache GUNSHIP™

THE ATTACK HELICOPTER SIMULATION



The Apache... Fierce and elusive, like its warrior namesake... Capable of defeating enemy tanks, infantry, and hostile aircraft on the modern electronic battlefield.

Gunship's revolutionary 3-D graphics enable you, the pilot, to fly into the world's hottest trouble spots... You'll use an unbelievable array of high tech information and weapon systems, including lasers, video cameras, night viewers, radar warnings, jammers, computers, missiles, rockets, flares, and a 30mm cannon! Successful missions will be rewarded with medals and rank promotions.

Experience the danger and excitement of attack helicopter action... your latest adventure in the ever-growing line of MicroProse Simulation Software.

Challenge the enemy, the sky, and yourself with this extraordinary simulation!

GUNSHIP. *For Commodore 64/128 and Atari XL/XE computers at a suggested retail of $34.95; also for Apple II Family, IBM PC/PC Jr., Tandy 1000, Atari ST and Amiga at $39.95. Call or write for specific machine availability, and for MC/VISA orders if product not found locally.*

COMMODORE, ATARI, APPLE, IBM, TANDY AND AMIGA are registered trademarks of Commodore Electronics Ltd., Atari Inc., Apple Computer Inc., International Business Machines Corp., Tandy Corp., and Commodore-Amiga Inc., respectively.

MICRO PROSE™
SIMULATION • SOFTWARE

120 Lakefront Drive • Hunt Valley, MD 21030 • (301) 771-1151

Circle 68 on Reader Service card.

DFPRINT

This accessory to Datafile will create mailing labels and reports according to your customized formats.

By MIKE KONSHAK

We continue the updated Datafile series with DFPrint, the first of the two major accessory programs you need to print out Datafile records. Type in DFPrint (Listing 1) and run it. The configuration menu described at the end of this article appears first. Choose among options 1–4 before continuing.

DFPrint will then present these options:

```
DATAFILE FAST PRINT PROGRAM

OPEN RECORD FILE ON DISK
$ DISK DIRECTORY 4
QUIT PROGRAM

TRANSFER TO:
  D DATAFILE
  C DFCALC

PRESS THE APPROPRIATE KEY
```

DFPrint assumes that you'll be printing a record file that was created, edited and written (saved) to disk with Datafile and that the record file is located on the disk in the disk drive. It prints the records in the order in which they were last sorted and saved by Datafile. DFPrint can only read record files, and so cannot make any changes to the records.

Pressing $ or 4 lets you see the disk directory, and Q quits the program altogether. Pressing O invokes a prompt for you to enter the name of the Datafile to be read. Insert the disk containing your records, type in the name of your record file, MEMBERS, and press the return key. The program will read the structure of the file to get information it will use later. After the light on the drive goes out, you'll see the following menu:

```
RECORD PRINTOUT MENU

PRINT OPTION: NO FORMATS
        PRESENT
  UNFORMATTED LIST
  REPORTS FORMAT Formats: RP] *
  MAILING LABELS          : ML] *

CONFIGURE:
  LABELS: 5 ROWS, 34 CHRS,
    1 ACROSS
  PRINTER: OPTION 4, DEVICE# 3
  EXIT TO RESTART

PRESS THE APPROPRIATE KEY
```

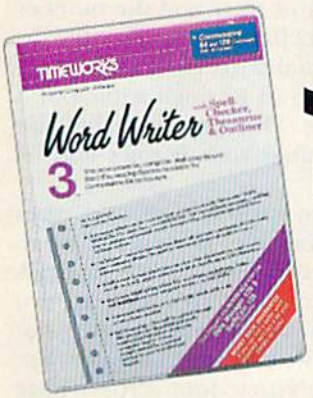
This screen lets you choose the type of printout that best suits your needs and reconfigure the printer or change label sizes and type. You can

RUN It Right

C-64; printer

ILLUSTRATED BY CARY HENRIE

THE LEADING C64 WORD PROCESSOR JUST GOT BETTER!



No Brag. Just Fact. WORD WRITER 3 has more features, more power, and is easier-to-use than any other C64 word processor.

***And now the facts!* We've added:**

- **An 85,000-Word Spell Checker** – plus, unlimited sub-dictionaries.
- **An Integrated Thesaurus** with over 60,000 synonyms and alternatives.
- **An Integrated Outline Processor** that quickly organizes notes, facts, and ideas into a convenient outline format.
- **An 80-Column Print Preview Mode**
- **Highlighting:** Prints out your text incorporating underlining, **boldface**, *italics*, superscript, subscript, and more.
- **Headers and Footers**
- **Automatic Program Set-Up:** Configures WORD WRITER 3 to your choice of printer codes, screen colors, and more.
- **SwiftKeys*** access commands quickly, using a minimum of keystrokes.
- *. . . and much, much more!*

You Get Free, Ongoing Technical Support

Rest assured. When you show your support by buying Timeworks software, we never stop showing ours. That's why our twelve Customer Support Technicians have been giving our T.L.C. (Technical Loving Care) *for over four years.* And, all our programs have a Money Back Guarantee**

Word Writer 3 interfaces with Timeworks' other C64 programs for a complete Productivity System:

- **DATA MANAGER 2** with **Report Writer**
  A highly flexible filing and recordkeeping system that stores, retrieves, sorts, evaluates, and updates large amounts of information. Includes: Report Writing, Graphics, Statistics, and Label Making capabilities.
- **SWIFTCALC** with **Sideways**
  A powerful, surprisingly easy-to-use electronic spreadsheet for home and business use. Plus, with Sideways, prints all your columns on one, continuous sheet – sideways!
- **PARTNER 64**
  A cartridge-based product with eight instantly accessible desktop accessories. PARTNER operates *"concurrently"* with your other C64 software programs.

Available for Commodore 64/128* Computers (64K, 40 Column)

Suggested Retail List Prices:

WORD WRITER 3	**$49.95**
DATA MANAGER 2	**$39.95**
SWIFTCALC	**$39.95**
PARTNER 64	**$59.95**

Now at your favorite dealer, or contact Timeworks today.

To Order Call
1-800-535-9497

TIMEWORKS®

More power for your dollar

Timeworks, Inc. 444 Lake Cook Road
Deerfield, Illinois 60015 312-948-9200

These Programs Are GEOS* Compatible

** Details on every Timeworks package.
* Registered trademarks of Commodore Electronics, Ltd., Timeworks, Inc., Berkeley Softworks, Inc.
© 1983 Timeworks, Inc. All Rights Reserved.

also display the disk directory from this menu.

Printing Unformatted Lists

This is by far the easiest printout option, because you don't have to create a format. Records and fields will be printed in much the same way that you might fill out 3-by-5 cards. An unformatted report resembles the following:

```
[ RECORD # 1 ]----------
NAME .....MIKE
AGE .....39
BIRTHDAY .....05/28

[ RECORD # 2 ]----------
NAME .....BECKY
AGE .....27
BIRTHDAY .....06/27

[ RECORD # 3 ]----------
NAME .....SARAH
AGE .....11
BIRTHDAY .....09/10
```

The name of each field is printed along with the field data and record number. The program will automatically skip over the perforations by calculating how many complete records will fit onto one page. The dashed line is printed across the entire page as a guide for cutting the paper in case you wish to attach the record data to a card. This type of printout uses a considerable amount of paper, so it's best to define a report format for printing large files.

If your field lengths exceed 60 characters, you'll have to put your printer into a compressed mode. This prevents the record data from wrapping around to the next line, which would throw off the pagination count.

Selecting Records

After you've chosen the Unformatted List option or entered a print format into the computer from the disk, the disk drive light will turn on as the drive positions itself at the start of your record file. Then, using the following screen, select which records to print out:

```
PRINT OPTIONS MENU

THERE ARE 22 RECORDS IN
  MEMBERS

ALL RECORDS IN FILE
  FIND RECORDS WITH COMMON
    FIELDS
  EXIT BACK TO START

PRESS THE APPROPRIATE KEY
```

Pressing A prints the entire file using the current format. You'll first be asked the starting record number. Record 1 is the default starting position.

Pressing F invokes a routine that searches for records according to your entered data. After choosing the field to be searched, enter the data to which the records will be compared. If the beginning of the record field matches your data, the record will be printed out.

Pressing the return key during printing stops the process after a record is completed. You can continue printing or exit the routine, as prompted.

Print-Format Options Menu

Whenever you choose M for mailing labels or R for reports at the record-printout menu, you'll be confronted with the following screen:

```
PRINT OPTIONS MENU

CURRENT RECORD FILE: MEMBERS
CURRENT FORMAT FILE:
  LOAD OLD FORMAT
  CREATE/CHANGE FORMAT
  SAVE CURRENT FORMAT
  PRINT RECORDS
  DIRECTORY $
  EXIT

PRESS THE APPROPRIATE KEY
```

If you're accessing this routine for the first time and no print format is present, then two of the options, Print and Save, will not be displayed. If you have a format on the disk, then you can load it by first pressing L and then entering the format filename as prompted.

If you've never created a print format for the type of printout you want, or if you desire to change one that's already loaded, you must press C to enter the respective format-definition routines. Creating formats will be discussed in subsequent sections.

Once a print format is present in memory, pressing P will advance you to the Print Options menu, which selects records for printing. This menu was discussed above.

Mailing-Label Formats

Before records from your file can be printed out on labels, you must define a label format specifically for your file. Formats tell the computer which of your record fields to print in each row of the label. Besides the actual data that's to be printed, you must define the size of your label.

The size of a label is specified by the number of rows and the number of characters in each row. Datafile defaults to a standard label size, which measures $^{15}/_{16}$ of an inch wide and 3 inches long. This popular label size can be printed with 5 rows and 34 characters.

There are various sizes and types of labels available. By types, I mean the number of labels across a page, sometimes referred to as one up, two up, and so forth. Datafile will print up to 30 rows and 136 characters per row on labels up to four across a page (four up). You should be able to design a format around any size or type of label. I prefer one-up labels, but some printers don't have adjustable tractors, in which case you must print the labels two (or more) up.

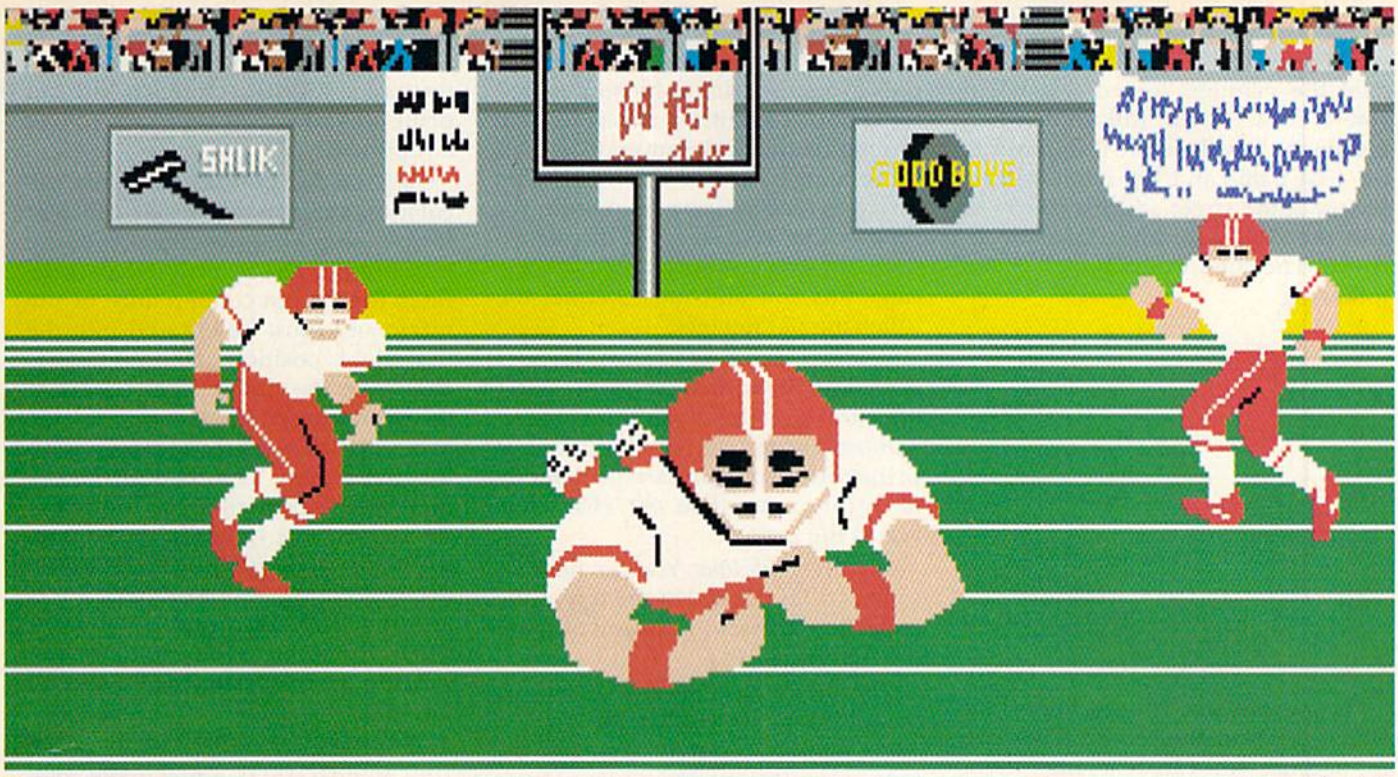
After defining the number of rows, you'll be asked which fields you want printed in each row. Up to three record fields may be printed in each row and in any order. You'll be required to enter at least one record-field number for the first field in each row that will print data. If you want to skip a row (print a blank line), you must enter a zero in all three fields for that row.

When asked for fields 1–3 in each row, enter the record-field number behind the prompt. A zero will be preprinted for you the first time. If you only want one record-field in a row, enter the desired record-field number for field 1 and zeros for fields 2 and 3.

For example, let's use the address record file called MEMBERS for creating a label format. MEMBERS is a good candidate, since it needs to combine multiple fields in several rows. MEMBERS has the following structure:

Field	Title	Length
1	LAST NAME	15
2	FIRST NAME	15
3	STREET ADD	30
4	CITY ST	22
5	ZIP	7
6	PHONE	12
7	DATE JOINED	8

Knowing the record file structure,



Amiga screen

SO REAL IT HURTS

GFL Championship Football™

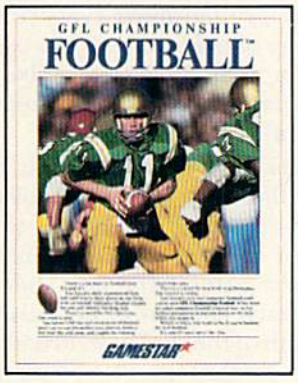
The way computer football *should* be.

Other football games put you in the grandstands, looking down on the action. Now see what it's like from the *player's* perspective—looking out of your helmet at an angry linebacker headed straight for you, and no blockers in sight.

With **GFL Championship Football,**™ you've got the first football simulation that actually takes you down on the field, taking the hits and making the plays. And it's more than just a pretty picture—you really get the feel of *playing* football.

No other football simulation gives you so many features:

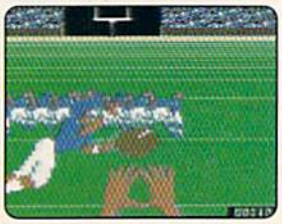
- *In-the-helmet perspective* puts you at ground level on the playing field.
- *Scrolling-screen animation* moves you up and down the playing field.
- *Realistic sound effects* let you hear everything from the quarterback calling the signals to the sound of your own footsteps.
- *Team selection screens* allow you to set the playing style of your team and that of your opponent.



Whether you're taking on bone-crunching action against a friend, or going up against any of the 27 computer-controlled teams in the **GFL**, this is the one that puts you where the action is!

Available now for the Commodore 64/128.
Coming Soon for the IBM PC/PCjr and Tandy 1000, Apple II, Amiga, Atari ST and 100% compatible computers.

Amiga screen



Commodore 64-128 screen

Commodore 64-128 screen

Commodore 64-128 screen

GAMESTAR

Gamestar is a trademark of Activision Inc. Commodore 64, 128 and Amiga are trademarks of Commodore Electronics Limited. IBM PC and PCjr are trademarks of International Business Machines Corporation. Tandy is a trademark of Tandy Corporation. Atari and ST are trademarks of Atari Corporation. Apple is a trademark of Apple Computer. Activision is the registered trademark of Activision Inc. © 1986 Activision Inc.

Circle 5 on Reader Service card.

we'll create a label with five rows. The date the member joined will be in row 1, so he or she will know when it's time to pay dues. We'll skip row 2, the first name and last name will be in row 3, the street address in row 4, and the city, state and Zip code in row 5. The rows would look like the following:

Row	Field1	Field2	Field3	Will print
1	7	0	0	DATE JOINED
2	0	0	0	
3	2	1	0	FIRST & LAST NAME
4	3	0	0	STREET ADDRESS
5	4	5	0	CITY ST & ZIP

As you can see, it's not important which position the record fields are in, because you can rearrange them when you create the label format. Again, let me remind you that the default label size is 5 rows, 34 characters long and one up. If you're using a different size or type of label, you must alter the label configuration by pressing L at the print-options menu.

Label formats are handy if you wish to review all your records on the screen. Use printer option 4 and one of the multiple-up options, and change the number of characters to get as many records as possible across the screen.

When you finish defining your label format, you'll have an opportunity to review and change the format. If you press N, you'll be asked if you want to save the label format. You should do so immediately, lest you forget it later. Press Y and you'll be prompted with the current record filename. Either press the return key to accept the filename as is, or make the appropriate changes. Use no more than 12 characters for your label-format filename. A label format with the same name will be scratched and replaced with the new format file. Label format files appear on the disk in the form ML] MEMBERS.

Creating Report Formats

Just like labels, a report format must be designed around your record file if you wish to print the data in an organized and well-presented columnar report. Reports differ from labels in that the record-field data is printed in columns instead of rows. This report-format routine is recommended for reports containing mostly text, although the last column may be used for totaling numbers. Use the DFCalc program (appearing next month) for reports that require a lot of calculations. In every report, you have the capability for, and must define, the following parameters:

Width in characters. Up to 136 characters can be printed across the page, depending on the capabilities of your printer. You might have to put your printer into a compressed print mode to print more than 80 characters across the page.

Number of title lines. You can have up to four titles printed at the top of the page. The titles will appear only on the first page.

The title for each title line. Titles can be as long as the width of the report. They may not contain commas, colons or semicolons. Examples of titles are: company name, date, report information and sources.

Number of columns. You can have up to 16 columns, at least one of which must be printed.

Header for each column. Headers identify the contents of the column and may be any name you choose. They are printed above every column at the top of every page. They cannot be wider than their respective columns, nor can they contain commas, colons or semicolons.

Position of each column. You must specify the starting location of each column—a number from 1 to the width of the report. You'll have to determine beforehand how wide you expect each column to be, based on the length of the record-field data that will be printed in the column. In doing your calculations, keep in mind that the columns will be separated by two spaces. You may have to go back and adjust the width of the report and the position of the columns after you see your first printout. A sheet of graph paper comes in handy here.

Contents of each column. Up to three record fields can be printed in each column. The fields within a column will be separated by one space, and the entire contents of the column will be printed left-justified. At least one record field must be chosen for each column and entered in the first field position. As in formatting labels, enter zeros for any unused fields. The record-field titles will be printed on the screen for easy reference. You can print only one record in each row of a report.

Total the last column? The only calculation the report format will perform is summing the contents of the last column. The record-field data defined for the last column must be numeric and must be entered into the first field position. If nonnumeric data (like the dollar sign) occurs at the beginning of the record field, the program will produce a result of zero for that record. The total of the column will be printed at the bottom of the report. The values in the column will be printed right-justified with two decimal places, such as 125.50. To select the Totaling option, choose 1 when prompted at the end of the formatting process. Entering 0 turns off totaling.

When you're finished defining your report, you're asked if you want to go back and review or change the format parameters. If you respond with N, you're asked if you want to save the format. If you've made any changes at all to an existing format, or have created a new format, press Y at this time. Use the preprinted filename or type in a new name. Use a maximum of 12 characters in the name of the report-format file. If a file with the same name already resides on the disk, that file will be scratched, to be replaced by the new one.

Using the file MEMBERS as an example, you might create a report format using the following parameters:

```
REPORT FORMAT FILE: MEMBERS
  (appears on the disk as RP] MEMBERS)
NUMBER OF CHARACTERS (wide): 80
NUMBER OF TITLE LINES: 2
TITLE 1: CLUB MEMBER ADDRESS LIST
TITLE 2: MAY 31 1985
NUMBER OF COLUMNS: 5
CLM 1: POSITION = 1 HEADER =
  FIRST/LAST NAME FIELDS = 2 1 0
CLM 2: POSITION = 19 HEADER =
  STREET ADDRESS
FIELDS = 3 0 0
CLM 3: POSITION = 41 HEADER =
  CITY AND STATE FIELDS = 4 5 0
CLM 4: POSITION = 60 HEADER =
  PHONE NUMBER FIELDS = 6 0 0
CLM 5: POSITION = 74 HEADER =
  JOINED FIELDS = 7 0 0
TOTAL LAST CLM: 0
```

Enter the above values after the re-

spective prompts. You'll notice that after you've entered a value, it will be preprinted for you when you go back to review the format parameters.

Printer Interface Configuration

Because there are so many printers that will attach to the C-64 computer, Datafile can be configured to your special system. Upon accessing DFPrint or DFCalc you'll be given a choice of four print configurations. The option display will appear as follows:

```
PRINTER-INTERFACE CONFIGURATION

CURRENT OPTION IS 4
PRESS 1 CARDCO A, C = 1525
      2 PRINTERS W/GRAPHIC
        INTERFACES
      3 C = 1526, C = MPS801/802/803
      4 PRINT OUTPUT TO SCREEN
        OR SEND PRINTER COMMANDS
      EXIT TO CONTINUE

PRESS THE APPROPRIATE KEY
```

Options 1–4 are for choosing the configuration. The current option will change each time you press one of these numbers. After selecting one (such as 4, for printing to the screen), you can choose to send commands to your printer or exit this menu into the next part of the program.

Sending Printer Codes

Pressing S from the printer-interface configuration menu will deliver you to a routine for sending ASCII codes to set up your printer for various print modes and styles. Most Commodore printers don't offer much flexibility with compressed print and various type fonts.

You'll have to check your printer manual for the codes you can send. Look for statements that print numbers within CHR$( ) commands, such as PRINT#4,CHR$(15), which makes a Commodore printer print all double-wide or enhanced characters, or PRINT#4,CHR$(27)CHR$(66)CHR$(2), which invokes a compressed print mode (12 characters per inch) on Star printers. Commands that look like PRINT#4,ESC "W"1 must be converted to their ASCII equivalents, such as PRINT#4,CHR$(27)CHR$(87)CHR$(1).

When you're sending printer command codes, enter only the numbers within the parentheses, such as 27, 66 and 2. Enter the numbers one at a time, following each number with a return. You may send one to four numbers, then terminate the sequence with an asterisk (*). Your printer will probably do a linefeed at this point, indicating it has received something.

You can test your change by pressing T at the end of the routine, and you can also choose to send another code by pressing A. E will return you to where you left off in the particular program you're in.

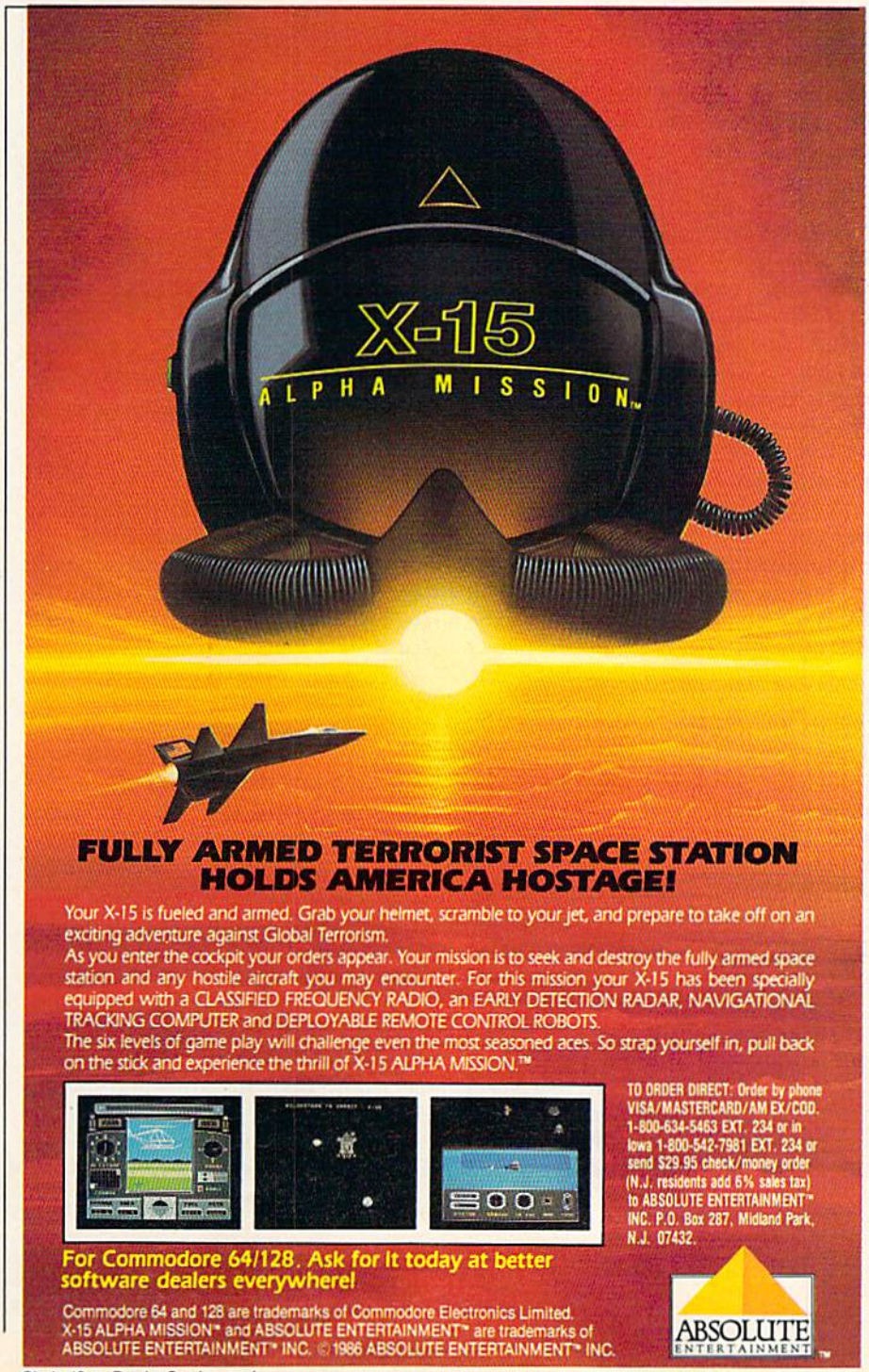
Next month, we'll present DFCalc, Datafile's second accessory program. ®

Address all author correspondence to Mike Konshak, 4821 Harvest Court, Colorado Springs, CO 80917.

Listing 1. *DFPrint program.*

```
10 IFFL=0THENFL=1:LOAD"DP] DOS5.
   1",8,1                    :REM*150
11 IFFL=1THENFL=2:SYS52224:REM(C
   )COMMODORE                :REM*155
600 FORE=0TO24:POKE54272+E,0:NEX
    T:POKE54296,15:GOTO1500
                             :REM*156
602 POKE54277,58:POKE54278,16:PO
    KE54273,35:POKE54272,134
                             :REM*246
```

Continued on p. 84.


X-15
ALPHA MISSION™
FULLY ARMED TERRORIST SPACE STATION HOLDS AMERICA HOSTAGE!
Your X-15 is fueled and armed. Grab your helmet, scramble to your jet, and prepare to take off on an exciting adventure against Global Terrorism.
As you enter the cockpit your orders appear. Your mission is to seek and destroy the fully armed space station and any hostile aircraft you may encounter. For this mission your X-15 has been specially equipped with a CLASSIFIED FREQUENCY RADIO, an EARLY DETECTION RADAR, NAVIGATIONAL TRACKING COMPUTER and DEPLOYABLE REMOTE CONTROL ROBOTS.
The six levels of game play will challenge even the most seasoned aces. So strap yourself in, pull back on the stick and experience the thrill of X-15 ALPHA MISSION.™
TO ORDER DIRECT: Order by phone VISA/MASTERCARD/AM EX/COD. 1-800-634-5463 EXT. 234 or in Iowa 1-800-542-7981 EXT. 234 or send $29.95 check/money order (N.J. residents add 6% sales tax) to ABSOLUTE ENTERTAINMENT™ INC. P.O. Box 287, Midland Park, N.J. 07432.
For Commodore 64/128. Ask for it today at better software dealers everywhere!
Commodore 64 and 128 are trademarks of Commodore Electronics Limited.
X-15 ALPHA MISSION™ and ABSOLUTE ENTERTAINMENT™ are trademarks of ABSOLUTE ENTERTAINMENT™ INC. © 1986 ABSOLUTE ENTERTAINMENT™ INC.
ABSOLUTE ENTERTAINMENT™
Circle 49 on Reader Service card.

PICK YOUR PS AND QS

If you're a student or just enjoy words, you can improve your vocabulary with this easy-to-play game.

By PENNY DeGROFF

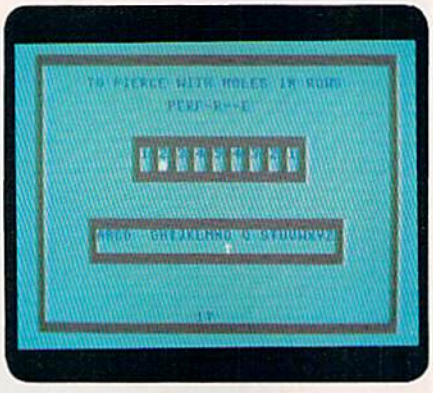
Pick Your Ps and Qs is a game written for young students wishing to expand their vocabulary or for anyone who enjoys a word-game challenge.

The program contains ten words and their definitions. When it's booted up, the computer chooses, at random, one word and its definition. The definition is printed near the top of the screen, and below it appears a series of dashes, one for each letter in the word. Two boxes appear in the center of the screen, one (the upper) containing the numbers 1, 2, 3, 4, 5, 4, 3, 2, 1 and the other the letters of the alphabet.

A solid ball moves from one number to another in the upper box. Using a joystick in port 2, the player presses the fire-button to stop the ball from moving. The number above the ball is the number of points the player receives if he or she picks a letter that belongs in the word.

An arrow then appears in the lower box. Using the joystick, the player moves the arrow to a letter he or she thinks is in the word and presses the fire-button. If that letter *is* in the word, it replaces one or more of the dashes, and the player's score, shown at the bottom of the screen, increases. If the player picks an incorrect letter, a buzzer sounds.

Play is continued until the entire word is revealed. If the player can guess the word without picking an incorrect letter, he or she receives a ten-point bonus, signified by a flashing border. The game is over when all ten words have been played. At that point the player's final score, along with the high score, is displayed.



Sample screen display from Pick Your Ps and Qs game program.

You'll probably want to change the words from time to time. To do this, list lines 710 to 800. Each line, in the form of a Data statement, contains one word, a comma and that word's definition. Move the cursor to the word to be changed and type in your replacement word, followed by a comma and the definition. Be sure to press the return key after you make the change. (Of course, if you're playing the game, you'll want to have someone else set it up for you.)

One word of caution: Don't place a comma within a definition. If you must separate the words in a definition, use a hyphen or a semicolon. Also, to keep the screen formatted properly, a definition should not contain more than 36 letters and spaces.

For a change of pace, you might set the game up to have the player find antonyms (words with opposite meanings) or synonyms (words with similar meanings). R

Address all author correspondence to Penny DeGroff, Route 2, Box 2605, Garfield, AR 72732.

Listing 1. *Pick Your Ps and Qs program.*

```
10 DIMD$(24):D$(0)=CHR$(19):FORX
   =1TO24:D$(X)=D$(X-1)+CHR$(17)
   :NEXT                    :REM*80
20 FORX=54272TO54295:POKEX,0:NEX
   T:POKE54296,15           :REM*240
30 PRINTCHR$(147):POKE53280,6:PO
   KE53281,6:POKE646,1      :REM*36
40 PRINTD$(6)TAB(5)"PPPP IIII CC
   CC K{2 SPACEs}K{6 SPACEs}AAAA
   "                        :REM*100
50 PRINTTAB(5)"P{2 SPACEs}P{3 SP
   ACEs}I{2 SPACEs}C{4 SPACEs}K
   K{7 SPACEs}A{2 SPACEs}A"
                            :REM*86
60 PRINTTAB(5)"PPPP{3 SPACEs}I{2
    SPACEs}C{4 SPACEs}KK{8 SPACE
   s}AAAA"                  :REM*34
70 PRINTTAB(5)"P{6 SPACEs}I{2 SP
   ACEs}C{4 SPACEs}K K{7 SPACEs}
   A{2 SPACEs}A"            :REM*168
80 PRINTTAB(5)"P{4 SPACEs}IIII C
   CCC K{2 SPACEs}K{6 SPACEs}A{2
    SPACEs}A"               :REM*0
90 PRINTD$(15)TAB(5)"L{4 SPACEs}
   EEEE TTTT TTTT EEEE RRRR"
                            :REM*16
100 PRINTTAB(5)"L{4 SPACEs}E{6 S
    PACEs}T{4 SPACEs}T{2 SPACEs}
    E{4 SPACEs}R{2 SPACEs}R"
                            :REM*36
110 PRINTTAB(5)"L{4 SPACEs}EEE{4
     SPACEs}T{4 SPACEs}T{2 SPACE
    s}EEE{2 SPACEs}RRRR"  :REM*64
120 PRINTTAB(5)"L{4 SPACEs}E{6 S
    PACEs}T{4 SPACEs}T{2 SPACEs}
    E{4 SPACEs}R R"         :REM*96
130 PRINTTAB(5)"LLLL EEEE{3 SPAC
    Es}T{4 SPACEs}T{2 SPACEs}EEE
    E R{2 SPACEs}R"         :REM*56
140 FORX=1064TO1103:POKEX,90:POK
    EX+54272,1:NEXT         :REM*44
```

Circle 78 on Reader Service card.

SPORTS!

From the incredible realism and playability of Football...

...to the sophisticated statistical simulation of Baseball...

...SubLOGIC. The State of the Art in Sports Simulations.

See Your Dealer. For additional product ordering information or the name of the dealer nearest you, call (800) 637-4983.

subLOGIC Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

Order Line: (800) 637-4983
(except in Illinois, Alaska, and Hawaii)

MAC INKER™

MAC INKER™, Automatic Ribbon Re-inker. Re-ink any fabric cartridge or spool for **less than 5 cents**. Over 70,000 in the field and we support **ALL** printers. Universal Cartridge or Universal Spool MAC INKER

$68.50. We have cartridges re-inkable in 10 colors. Ask for your printer type or for complete listing. Bottle ink $3.00/each. Shipping $3.00.

PROTEUS™, the 'Siamese' Buffer. It is a **Data Switch** with buffer on both ports. Switch manually or via software. Saves time, space and money. Or ask about our **MAC MASTER** line of Universal Buffers and Printer Controllers (serial or parallel up to 1 MEG).

PROTEUS 64 K-199.00
256 K-299.00 Shipping $4.00.
Of course we have **Data Switches**, serial/parallel, 2 way, 4 way, crossed etc., at most competitive prices (all lines switched).

CABLES priced $10-25. We carry cables for all common computers and peripherals. Rapid turn-around on custom orders.

MERCURY MODEM. Really 100% Hayes* Compatible. 300/1200 baud, speaker, full status light display and 2 years warranty. Includes **QUICK LINK**, easiest and most reliable Comms Software (available for IBM PC or Macintosh) **$149.00** Shipping $4.00.

*Hayes is a trademark of Hayes Microproducts.

MAC THE RIPPER. Our newest, original and welcome printer companion. Pulls off paper perforations and tears the sheets apart. Takes little space and will pay for itself almost immediately in saved time and tedium. Ask for brochure. Introductory Price **$299.00.** Shipping $10.00.

Order Toll Free.
Call or write for free brochure.
1-800-547-3303
In Oregon 503-626-2291 (24 hour line)
We are and always will be your

Computer Friends®

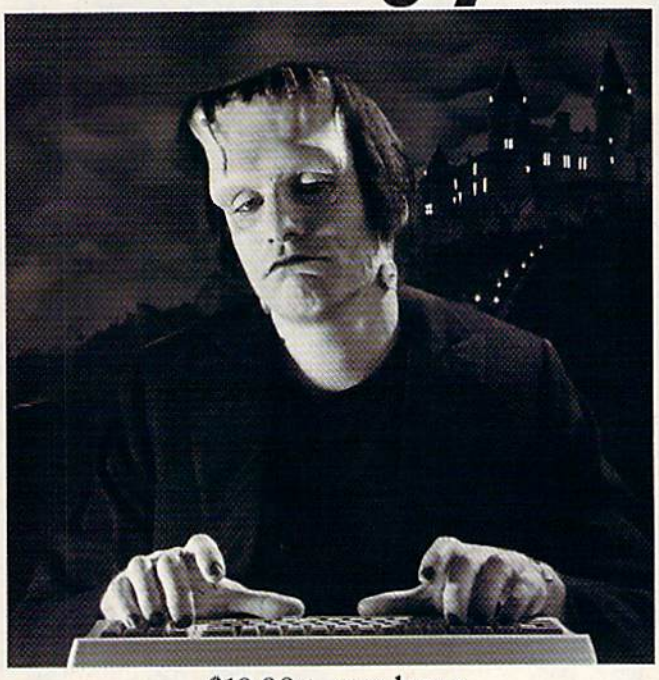
14250 N.W. Science Park Drive
Portland, Oregon 97229 Telex 4949559
Dealer inquiries welcome.

Circle 274 on Reader Service card.

Listing 1 continued.

```
15Ø FORX=1143TO2Ø23STEP4Ø:POKEX,
    9Ø:POKEX+54272,1:NEXT:REM*92
16Ø FORX=2Ø22TO1984STEP-1:POKEX,
    9Ø:POKEX+54272,1:NEXT
                          :REM*198
17Ø FORX=1944TO11Ø4STEP-4Ø:POKEX
    ,9Ø:POKEX+54272,1:NEXT
                          :REM*216
18Ø FORX=1TO5:POKE5328Ø,2:POKE53
    281,2:FORDE=1TO2ØØ:NEXT
                          :REM*12Ø
19Ø POKE5328Ø,6:POKE53281,6:FORD
    E=1TO2ØØ:NEXT:NEXT:FORDE=1TO
    5ØØ:NEXT              :REM*1Ø
2ØØ PA$="PRESS FIRE BUTTON TO PL
    AY AGAIN"             :REM*176
21Ø FORX=1TO1Ø:READAN$(X),CL$(X)
    :NEXT:PP(1)=1436:FORX=2TO9:P
    P(X)=PP(X-1)+2:NEXT   :REM*5Ø
22Ø FORX=1TO1Ø:AN(X)=Ø:NEXT:LE=Ø
    :SC=Ø:POKE5328Ø,3:POKE53281,
    3                     :REM*14
23Ø PRINTCHR$(147):LE=LE+1:IFLE=
    11THEN64Ø             :REM*94
24Ø F2=Ø:FORX=1Ø64TO11Ø3:POKEX,1
    6Ø:POKEX+54272,2:NEXT
                          :REM*122
25Ø FORX=1143TO2Ø23STEP4Ø:POKEX,
    16Ø:POKEX+54272,2:NEXT
                          :REM*18
26Ø FORX=2Ø22TO1984STEP-1:POKEX,
    16Ø:POKEX+54272,2:NEXT
                          :REM*125
27Ø FORX=1944TO11Ø4STEP-4Ø:POKEX
    ,16Ø:POKEX+54272,2:NEXT
                          :REM*225
28Ø FORX=1355TO1373:POKEX,16Ø:PO
    KEX+54272,2:NEXT:FORX=1395TO
    1413STEP2             :REM*119
29Ø POKEX,16Ø:POKEX+54272,2:NEXT
    :FORX=1435TO1453STEP2:POKEX,
    16Ø:POKEX+54272,2     :REM*127
3ØØ NEXT:FORX=1475TO1493:POKEX,1
    6Ø:POKEX+54272,2:NEXT:REM*91
31Ø FORX=1TO9:POKEPP(X)+54272,1:
    NEXT:FORX=163ØTO1657:POKEX,1
    6Ø:POKEX+54272,2      :REM*61
32Ø NEXT:POKE167Ø,16Ø:POKE167Ø+5
    4272,2:POKE1697,16Ø:POKE1697
    +54272,2              :REM*87
33Ø POKE171Ø,16Ø:POKE171Ø+54272,
    2:POKE1737,16Ø:POKE1737+5427
    2,2                   :REM*51
34Ø FORX=175ØTO1777:POKEX,16Ø:PO
    KEX+54272,2:NEXT:FORX=1711TO
    1736                  :REM*1Ø9
35Ø POKEX+54272,1:NEXT:POKE646,6
    :PRINTD$(9)TAB(12)"1{CRSR RT
    }2{CRSR RT}3{CRSR RT}4{CRSR
    RT}5{CRSR RT}4{CRSR RT}3{CRS
    R RT}2{CRSR RT}1"     :REM*173
36Ø PRINTD$(16)TAB(7)"ABCDEFGHIJ
    KLMNOPQRSTUVWXYZ":PRINTD$(23
    )TAB(17)SC            :REM*197
37Ø RN=INT(RND(1)*1Ø)+1:IFAN(RN)
    =1THEN37Ø             :REM*131
38Ø AN(RN)=1:Y=LEN(AN$(RN)):Z=LE
    N(CL$(RN)):T$="":FORX=1TOY:T
    $=T$+"-":NEXT         :REM*189
39Ø PRINTD$(3)TAB((4Ø-Z)/2)CL$(R
    N):PRINTD$(5)TAB((4Ø-Y)/2)T$
                          :REM*175
4ØØ N=INT(RND(1)*9)+1:POKEPP(N),
    81:FORDE=1TO1ØØ:NEXT:REM*1Ø3
41Ø FB=-((PEEK(5632Ø)AND16)=Ø):I
    FFB=ØTHENPOKEPP(N),32:GOTO4Ø
    Ø                     :REM*239
42Ø FB=-((PEEK(5632Ø)AND16)=Ø):I
    FFB=1THEN42Ø          :REM*41
43Ø AP=1711:POKEAP,3Ø:F1=Ø:LV=PE
    EK(PP(N)-4Ø)-48       :REM*19
44Ø FORDE=1TO1ØØ:NEXT:FB=-((PEEK
    (5632Ø)AND16)=Ø):IFFB=1THEN5
    ØØ                    :REM*171
45Ø JS=PEEK(5632Ø)AND15:IFJS=11T
    HENDI=-1:GOTO48Ø      :REM*249
46Ø IFJS=7THENDI=1:GOTO48Ø
                          :REM*213
47Ø GOTO44Ø               :REM*233
48Ø IFPEEK(AP+DI)=16ØTHEN44Ø
                          :REM*95
49Ø POKEAP,32:AP=AP+DI:POKEAP,3Ø
    :GOTO44Ø              :REM*157
5ØØ IFPEEK(AP-4Ø)=32THEN44Ø
                          :REM*173
51Ø L$=CHR$(PEEK(AP-4Ø)+64):FORX
    =1TOY:IFL$<>MID$(AN$(RN),X,1
    )THEN55Ø              :REM*1Ø5
52Ø F1=1:T$=LEFT$(T$,X-1)+L$+MID
    $(T$,X+1):PRINTD$(5)TAB((4Ø-
    Y)/2)T$:SC=SC+LV       :REM*4
53Ø PRINTD$(23)TAB(17)SC:POKE542
    77,15:POKE54272,7Ø:POKE54273
    ,1ØØ:POKE54276,33     :REM*138
54Ø FORDE=1TO75:NEXT:POKE54276,3
    2:IFT$=AN$(RN)THEN57Ø:REM*64
55Ø NEXT:IFF1=1THEN57Ø    :REM*62
56Ø F2=1:POKE54277,45:POKE54272,
    2Ø:POKE54273,5:POKE54276,33:
    FORDE=1TO15Ø:NEXT     :REM*114
57Ø POKE54276,32:POKEAP,32:POKEA
    P-4Ø,32:POKEPP(N),32:IFT$<>A
    N$(RN)THEN4ØØ         :REM*12Ø
58Ø IFF2=1THEN61Ø         :REM*152
59Ø SC=SC+1Ø:PRINTD$(23)TAB(17)S
    C:FORQ=1TO2:POKE5328Ø,14:FOR
    DE=1TO1ØØ:NEXT        :REM*178
6ØØ POKE5328Ø,13:FORDE=1TO1ØØ:NE
    XT:POKE5328Ø,3:FORDE=1TO1ØØ:
    NEXT:NEXT             :REM*228
61Ø PRINTD$(24)TAB(11)"PRESS FIR
    E BUTTON";:FORDE=1TO5Ø:NEXT
                          :REM*21Ø
62Ø FB=-((PEEK(5632Ø)AND16)=Ø):I
    FFB=1THEN23Ø          :REM*24Ø
63Ø PRINTD$(24)TAB(11)"{17 SPACE
    S}";:FORDE=1TO5Ø:NEXT:GOTO61
    Ø                     :REM*124
64Ø FORDE=1TO1ØØØ:NEXT:PRINTCHR$
    (147):POKE5328Ø,9:POKE53281,
    8:POKE646,7           :REM*112
65Ø PRINTD$(9)TAB(15)"GAME OVER"
    :PRINTD$(12)TAB(12)"FINAL SC
    ORE:"SC               :REM*12
66Ø IFSC>HSTHENHS=SC      :REM*62
67Ø PRINTTAB(13)"HIGH SCORE:"HS
                          :REM*22Ø
68Ø PRINTD$(16)TAB(4)PA$:FORDE=1
    TO5Ø:NEXT:POKE646,1:PRINTD$(
    16)TAB(4)PA$          :REM*156
69Ø FORDE=1TO5Ø:NEXT:FB=-((PEEK(
    5632Ø)AND16)=Ø):IFFB=1THEN22
    Ø                     :REM*76
7ØØ POKE646,7:GOTO68Ø     :REM*1Ø8
71Ø DATA LAUDABLE,PRAISEWORTHY
                          :REM*98
72Ø DATA PERFORATE,TO PIERCE WIT
    H HOLES IN ROWS       :REM*92
73Ø DATA VISCID,STICKY OR ADHESI
    VE                    :REM*18Ø
74Ø DATA PENURIOUS,STINGY:REM*2Ø
75Ø DATA RIDICULOUS,ABSURD
                          :REM*14
76Ø DATA DISTRAUGHT,WORRIED
                          :REM*136
77Ø DATA PROBE,INVESTIGATE OR EX
    AMINE                 :REM*195
78Ø DATA TAUT,TIGHT       :REM*53
79Ø DATA HAZARDOUS,DANGEROUS
                          :REM*45
8ØØ DATA TOLERATE,ENDURE:REM*229
```

"Frankly, online computing costs were real ugly..."



$10.00+ per hour

Most online information networks can zap your computing budget faster than you can say "lightning." Not so with GEnie, the General Electric Network for Information Exchange. As part of the world's largest commercially available teleprocessing network of General Electric Information Services Company, GEnie lets you experiment with all of the fun and excitement that online computing has to offer.

Evenings, weekends, holidays. Just $5 per hour.

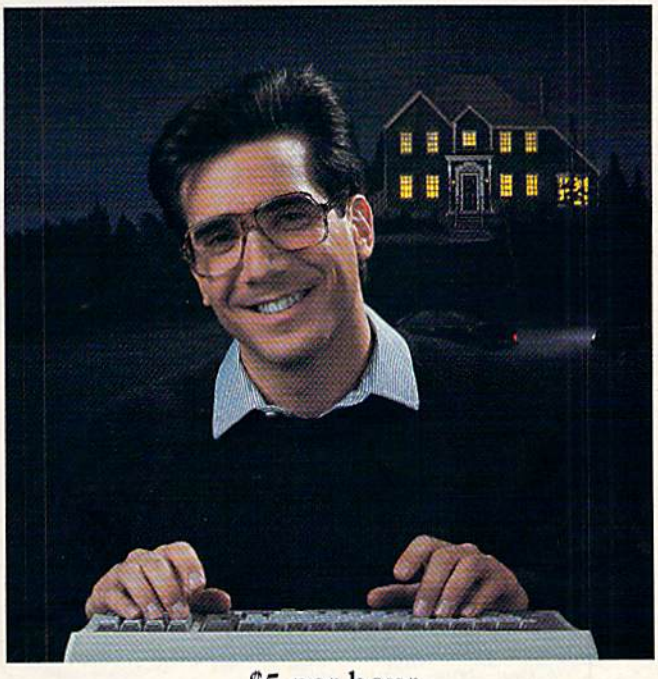
With GEnie, you can make friends, set up travel reservations, get the news, be entertained, even shop for a fraction of what other information services charge.

And you get a lot for your money.

With GEnie's *Flagship* Commodore† ***RoundTable™ Special Interest Group*** you can discuss the latest in Commodore products and accessories; download thousands of public domain software programs, and participate in exciting and informative online conferences. And, UPLOADS ARE FREE on GEnie! **There's more!**

Meet friends old and new with GEnie's ***LiveWire™ CB Simulator*** or exchange messages with GEnie's ***electronic mail*** service. Schedule a trip with ***American Airlines travel service.*** Fun and learning for the whole family with ***Grolier's electronic encyclopedia.*** Play classic and ***multiplayer games.*** Track stock market quotes, check market indicators and maintain an automatically updated personal portfolio online with GEnie's ***Financial Services.*** All this and there's more to come. New services are being added each and every month!

"With GEnie™ I found friends online, for less."



$5 per hour

Only $18 to register! Save up to 60%!

Check out the chart. Compare the savings for yourself. You'll find GEnie delivers all of your favorite services for an incomparable price, at incomparable savings.

*Compare & Save**	Services						Pricing			
	Travel & Shopping	*SIGs/User Groups*	*CB & Mail*	*Financial Services*	*News*	*Games*	*Registration Fee*	*Monthly Minimum*	*Non-prime time rates*	
									300 baud	*1200 baud*
The Source	X	X	X	X	X	X	$49.95	$10.00	$8.40	$10.80
CompuServe	X	X	X	X	X	X	$39.95	none	$6.00	$12.50
GEnie†	**X**	**X**	**X**	**X**	**X**	**X**	**$18.00**	**none**	**$5.00**	**$5.00**

**Basic rates and services shown in effect 11/86. †Non-prime time applies Mon.–Fri., 6pm–8am local time, all day Sat., Sun., and nat'l holidays. Subject to service availability. Additional charges apply for 2400 baud and financial services.*

With services and savings like these, now you can discover the friendliness of online computing without the high costs that can turn you into a downright monster. Get a happy ending going with GEnie. Sign up today!

Sign up from your keyboard today.
4 Easy Steps:

1. Have your Visa, MasterCard or checking account number ready.
2. Set your modem for local echo (half duplex)—300 or 1200 baud.
3. Dial **1-800-638-8369.** When connected, enter HHH
4. At the U# = prompt enter **XJM11902,GEnie** then RETURN.

Need help or more information? No modem yet? We can help. In U.S. or Canada call **1-800-638-9636.**

GEnie™

Stay online longer, for less.

GE INFORMATION SERVICES

General Electric Information Services Company, USA

GEnie rates and services subject to change. Uploads are free during non-prime hours at 300 or 1200 baud. Some services offered on GEnie may include additional charges. FRANKENSTEIN ™ ©1931, renewed 1959 Universal Pictures Company, Inc. All rights reserved. Licensed by Merchandising Corporation of America, Inc.

† *Commodore is a registered trademark of Commodore Business Machines.*

GET 'EM WHILE THEY'RE HOT

ReRUN Back Issues are going like hotcakes! And no wonder. Each Ready-to-Run disk is packed with the best 64 and 128 programs from RUN for home, business, entertainment, education, productive programming and more!

And if you act now, you can **TAKE $5.00 OFF** the total price of any 2 or more back issues. But supplies are limited (especially the '85 issues), so don't delay. Return the coupon below or CALL TOLL FREE 1-800-258-5473 (NH, 1-924-9471) for credit card orders and complete your software library today!

January/February 1986 Edition:
64 BasicAid, C-128 Autoboot Maker, Stack, Credit Card Keeper, 128 Perfect Typist, Runterm Plus, A-Maze-ing Word Jumbler, Pulsing Pictures, Auto-Run, New Names for Old Disks, Ultra Hi-Res Graphics, Tax Deductor's Delight, Fast-Food Chef, Datafile Restructure, and more!

March/April 1986 Edition:
Auto Menu, RUN Script 64, Create Your Own Keypad, Songfest, Autoboot, Automatic Line Numbers, ML Perfect Typist, A Modern Metronome, Gradebook 128.

May/June 1986 Edition:
Ultra Hi-Res Graphics, Part 2, Swish!, Disk Reader, Label Maker, Easy Data Entry, Arithme-Sketch, Quick Merge, Easy Disk-File Conversion, Give Your C-128 More Character, Murder By Byte, Collector's Cache.

EXTRA! Fancy "A" BUTTER

July/August 1986 Edition:
Hi-Res Writer, Needlegraph, Extra! Extra! Read All About It, Video Fantasia (128), Bootmaker 128/64, Disk Keeper, Add Some Character to Your C-64, Menu Subroutine, 3D Object Editor.

September/October 1986 Edition:
The Loan Arranger, Turtle-Tutor for Tykes, RUN Basic, Programmers, Take Note!, Sign Maker, Instant Data Statements, 64 Personal Ledger, Hi-Res Revolution, As the Word Turns, Making a Pointer, Double Vision, Chain Your Programs, Mega-Magic, Halloween Story.

November/December 1986 Edition:
CalcAid 64, Put It On Paper, Dashing Off The Dots, Math Square-Off, Micro Artist, Mega-Magic Nov., Basically Speaking Nov., Extra! Newsletter Graphics, RUN Script 128, ML Perfect Typist 2.0, Sum Fun, Mega-Magic Dec., Peg Solitaire 64.

Productivity Pak II:
AutoMenu, RUN Script 128, Runterm Plus, Gradebook 128, Datafile, DF Print, DF Calc, Turtle-Tutor for Tykes, Construction Set, Disk Backup, Reminder 128.

1985 Winter Edition:
Perfect Typist, Pay the Bills, UltraQuiz, Perfect Pitch, Make Music, RUN Assembler, Brainstorming and more!

1985 Fall Edition:
Home Run Derby, Turtle Graphics, Big Letters, Function Keys, Test Maker, Flynn's Gold, and more!

1985 Productivity Pak I:
Home Finance Aid, Basic 4.5, Datafile, DF Mail, DF Report, DF Print, DF Calc, Run Term, Run It Write, Disk Master, Graphmaker, Memo, Screen Print.

Fancy BUTTER

RE RUN

Mail to:
ReRUN, 80 Elm St.,
Peterborough, NH 03458

ReRUN Back Issues Order Form

Please send the ReRUN Back Issues I've checked below at $21.47 ea. for disks, $11.47 ea. for cassette ('85 Fall & Winter only), including postage and handling. **Subtract $5.00 off the total price with the purchase of any two or more.** Each issue includes a complete documentation booklet.

1985 Issues:

Fall: ☐ Cassette ☐ Disk Winter: ☐ Cassette ☐ Disk ☐ Productivity Pak I Disk only

1986 Issues (on Disk only):

☐ Jan/Feb ☐ Mar/Apr ☐ May/Jun ☐ Jul/Aug ☐ Sep/Oct ☐ Nov/Dec ☐ Productivity Pak II

☐ Payment enclosed ☐ MC ☐ Visa ☐ AE

Card# _____ Exp. Date _____

Signature _____

Please Print:

Name _____

Address _____

City _____ State _____ Zip _____

Disks contain more programs than cassettes. Prices include postage and handling. Please allow 4–6 weeks for delivery. US funds drawn on US banks only.

3-87BI

TOLL FREE 1-800-258-5473

THE ULTIMATE SCREEN SHOT

If you enjoy taking screen shots, here are a few hints to make them superb!

By MORTON KEVELSON

The "Focus on Screen Shots" article published in the September 1986 issue of *RUN* was a good introduction to screen photography. If you've been following the procedures it described, however, you may have noticed some limitations to the techniques. This article presents some additional hints that will help you produce truly excellent screen shots and make the process even easier than before.

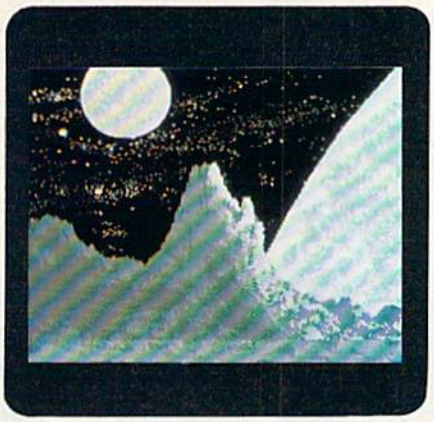
Framing the Picture

Although the standard lens supplied with your single-lens reflex (SLR) camera produces sharp pictures, it's still less than ideal for screen photography. The fault is not with the lens, but with the normal curvature of the video display screen. This curvature is unduly emphasized by the short camera-to-screen distance required to fill the frame when using a standard lens.

The solution is to use a lens with a longer focal length, which will let you move the camera away from the screen and still fill the frame. The added distance changes the perspective from the camera position, effectively flattening the appearance of the screen. I find that a 135mm lens is ideal. You may already have a general purpose zoom lens that will work just as well.

The 135mm lens will fill the frame at a working distance of about five feet, which is just a shade under the closest operating range of my lens. A minimum strength close-up lens will solve this problem, but a better solution is to obtain a set of extension tubes or focusing bellows to install between the lens and the camera's body. You could also look for a lens with "macro" capabilities. This type of lens has a long focusing thread that enables the camera to approach within inches of the subject.

Screen shot courtesy of Fox Valley 64 Users Group, N. Aurora, Illinois.



Screen shot of the Cyber Video demo disk, from Touchstone.

These gadgets have the added advantage of letting you get really close to small objects for some impressive close-up photography. I usually find that people who like to take screen shots also enjoy photographing tiny things.

When setting up the tripod, make sure you position the camera before the center of the screen so the center line of the lens is perpendicular to the screen surface. This will prevent distortion of the rectangular shape of the image.

The Exposure

The camera's built-in light meter should be used only as a guide for setting the exposure. Following it blindly for a screen filled with dark colors will result in an overexposed picture. Similarly, an image with large areas of light color will have its dark colors underexposed. Also, the light colors will lack their definitive brightness.

It will take a small amount of experimentation to discover the right exposure. Just bracket the exposure of your first screen shots one or two f-stops in either direction, and be sure to keep careful records of what you do.

I find that, for my setup, an exposure of one second at f/8 does well. Although shutter speeds as fast as 1/8 second will work, the slower one-second speed seems to produce a more uniform exposure. In addition, the greater depth of field associated with the smaller f-stop makes the focus less critical.

Unless your camera is firmly anchored to the bedrock of Manhattan, I highly recommend using a cable release for long exposures. If your camera has a built-in self-timer, it will serve just as well to eliminate the possibility of motion being transferred to the camera.

Once you decide on exposure and monitor settings, resist the temptation to fiddle with them.

You should also be aware that the settings of the video/monitor controls can have a drastic effect on the exposure and color balance of your screen photographs. I find the Commodore 1701, 1702 and 1902 (not the 1902A), and the Amiga 1080 monitors to be excellent in this regard. Their brightness, contrast, tint and color controls all have center detents that seem to have been factory-calibrated for optimum pictures.

If you elect to experiment with the monitor controls, I suggest adding your own markings to them, so they can be reset to known positions. Of course, you'll have to make a separate group of test exposures for each setting.

Once you decide on exposure and monitor settings, resist the temptation to fiddle with them, in spite of what your camera's light meter may say.

The previous article erred somewhat on the subject of video frame rates. The blanking intervals and retrace times, which are really very short, are all part of the video frame rate. The screen image of a noninterlaced display is actually redrawn 60 times per second.

Note that an Amiga running in Interlace mode will generate only 30 images per second. The resulting photos are immune to the apparent flicker that occurs with Interlace mode.

Film Processing

To avoid screen glare, you've probably been shooting in a darkened room. As a result, the area around the screen will appear nearly black on the resulting slides, making it difficult for the film developer to distinguish where one frame ends and the next begins. On occasion my Kodak-processed slides have come back with a note indicating that special attention was required to mount the slides. Just as often the slides are mounted with the images off center. A brief note on the processing envelope will alert the developer that your images will contain dark borders.

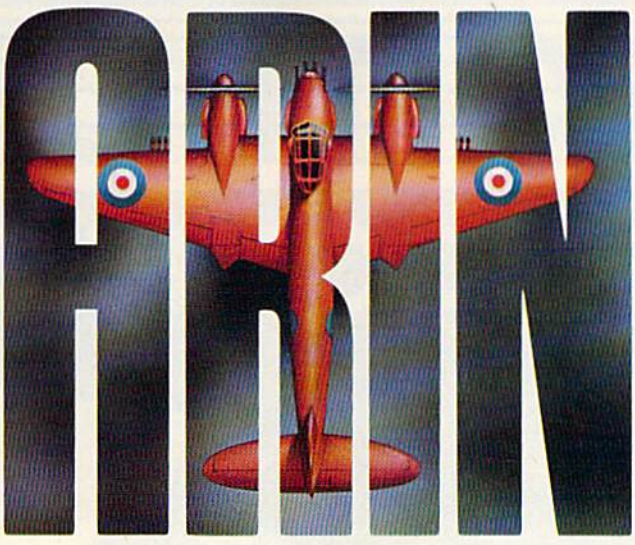
These additional hints should help you achieve truly fine screen photographs. How can you tell? Just examine your slides under magnification. You should be able to discern detail down to the pixel level.■

Address all author correspondence to Morton A. Kevelson, PO Box 260, Homecrest Station, Brooklyn, NY 11229.

Tonight, the Murder Club will be checking into the Gargoyle Hotel. Tomorrow, you may be checking out before the continental breakfast... in a body bag. Featuring over 20 different plots, Accolade's Killed Until Dead puts you in the gumshoes of the world's greatest detective, Hercule Holmes. You must try and prevent five of the world's most brilliant murder mystery writers from committing the perfect murder. Does steely-eyed Mike Stammer have a chainsaw up his sleeve? Will blubbery Sidney Meanstreet finally bury the hatchet... between little Agatha Maypole's shoulder blades? You have until midnight to solve the whodunnit, the whatdunnit and the wheredunnit before someone's gone and done it! Killed Until Dead. The mystery is pure Accolade. Available on Commodore 64/128. Accolade. 20813 Stevens Creek Boulevard, Cupertino, California 95014. Telephone 408-446-5757. ACCOLADE™

Circle 108 on Reader Service card.

SOARING!!



Strap on your parachute. Fasten your goggles. Accolade is about to launch you to new hair raising heights in combat simulation. Accolade's Ace of Aces combines all of the exhilaration of flight with the gut wrenching pressure of enemy confrontation. You'll climb into the cockpit of the maverick Mosquito fighter bomber, pride of the Royal Air Force during WWII, tangle with the Nazi Luftwaffe, dodge V-1 Buzz Bombs, then pierce through the clouds for a surprise bombing raid. What does it take to be an Ace? From you, legendary British pride and guts. From Accolade, legendary playability. Accolade has done its part. The rest is up to you, mate. Ace of Aces. The challenge is pure Accolade. Available on Commodore 64/128. Accolade. 20813 Stevens Creek Boulevard, Cupertino, California 95014. Phone 408-446-5757. ACCOLADE

Circle 108 on Reader Service card.

PANASONIC 1080i — $199.95
1091i — $259.95

MCS

DISKS 5¼ DS/DD .. $ .40
3½ DS/DD .. $1.50

BY COMMODORE* AMIGA™ 1000* PLUS 1080 Color Monitor

90 DAYS PARTS & LABOR

$850

C.P.U. IS REFURBISHED

- Future Sound . . . $139.95
- DIGI-VIEW $159.95
- 1080 Monitor . . . $259.95
- Enhancer . . . . . $ 14.95

SIDECAR
GEN LOCK
CALL!

- 256K RAM . . . . . $ 79.95
- 1680 Modem . . . $159.95
- Allegra (512K) . . $299.95
- Amega (1 Meg) . $399.95

NEW *LOW* PRICES!

- 64C . . . $169.95
- 128 . . . . $249.95
- 1541C . . $179.95
- 1571 . . . $219.95
- 1351 . . . $ 39.95
- 1670 . . . $119.95
- 1802C . . . . CALL
- 1902 . . . . . CALL

CALL US BEFORE YOU BUY!

Over 2400 software titles in stock!

NEW! star PRINTERS

NPIO $159.95

- NX10 . . . . . $199.95
- NX10C $219.95
- NL10 . . . . . $249.95
- NX15 . . . . . $319.95

FULL LINE — CALL!

commodore SFD 1001

1 MEG $179.95

1200 BAUD
FROM $88.00
2400 BAUD

commodore PC10-1
IBM Compatible

- 512K
- 360K Dual Sided Drive
- CGA Board
- One year warranty
- Parallel Port
- Serial Port
- GW BASIC
- DOS 3.2

FREE Sidekick by Borland

$699.95

SEIKOSHA SP-1000VC
COMMODORE READY
$164.95
NEAR LETTER QUALITY
FRICTION & TRACTOR
100 CPS
SHEET FEEDER

commodore Educator 64
$199.95
Commodore Compatible

ORDERS ONLY 800-433-7756
HOURS: MON-FRI 10:00 a.m. - 8:00 p.m. E.S.T.
SAT 10:00 a.m. - 6:00 p.m.
Customer Service
Dealer Inquiries 313-427-0267

JOYSTICKS FROM $ 5.95
INTERFACES FROM $ 29.95
OKI-MATE 20 $184.95

MC/VISA/DISCOVER/C.O.D. — Please include phone number. Dealer inquiries invited, all prices discounted for cash or check. Call for shipping information. All returns are for repair/exchange only, call for auth. Prices and availability subject to change without notice. Offices are not open for walk-in traffic.

Circle 207 on Reader Service card.

PRO-TECH TRONICS

C-64 COMPUTER

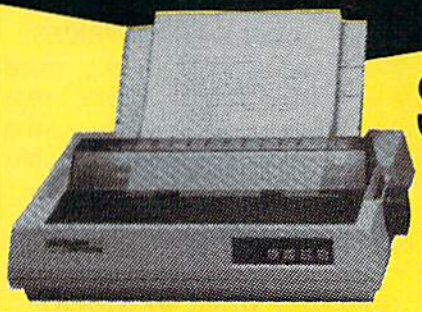
$99

*WITH PURCHASE OF SPECIALLY PRICED SOFTWARE PACKAGE

FACTORY SERVICED FULL WARRANTY

FREE HOME TRIAL

PRINTER



$149

SEIKOSHA

NEAR LETTER QUALITY
- 100 CPS Draft Mode
- 20 CPS NEAR LETTER QUALITY MODE
- Commodore Ready

PRINTER

star micronics

SG-10-C
$198

NEAR LETTER QUALITY

COMMODORE READY

- 120 CPS Draft
- 30 CPS NEAR LETTER QUALITY
- Includes Both...
  —TRACTOR FEED
  —FRICTION

FREE TRIAL PERIOD

CALL TODAY
OPEN 7 DAYS A WEEK & EVENINGS

1-800-345-5080

Circle 223 on Reader Service card.

COMMODORE

C-128

$199

*WITH PURCHASE OF 1571 DISK DRIVE

FACTORY SERVICED FULL WARRANTY

AMIGA

$799

*MONITOR $50 ADDITIONAL

FREE TRIAL PERIOD

DISK DRIVE

1541 COMMODORE

$148

MODEMS

300 BAUD

$28

$98 1200 BAUD HAYES COMPATIBLE

POWER SUPPLY

C-64

$39

JOY STICKS

$9

CABLE TV

NO PAY TV? CONVERTERS/ DECODERS

- JERROLD
- OAK
- HAMLIN

FREE HOME TRIAL

RADAR DETECTOR

RETAIL $249

MAXON SUPERHET

$78

QUICK DELIVERY

MasterCard VISA C.O.D.

SCHOOL P.O.'s ACCEPTED

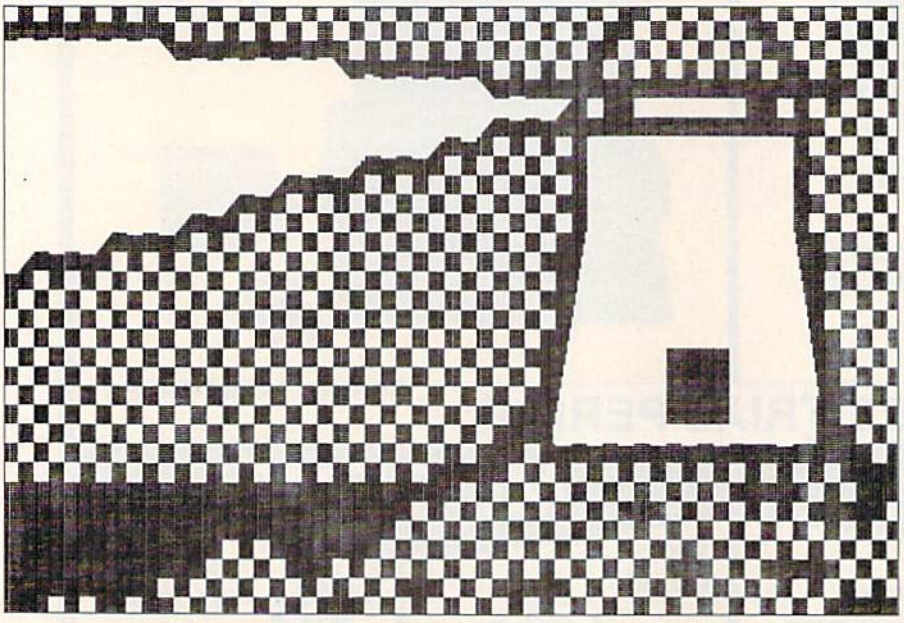
PRO-TECH-TRONICS
6860 Shingle Creek Parkway #201
Minneapolis, MN 55430
(612) 560-6603

Circle 223 on Reader Service card.

C-128 Screen Dump

Now you can print out your hi-res or multicolor 128 graphic screen creations with speed and ease.

By TRENT BILLS



The C-128's Basic 7.0 includes some graphics commands that make it easy for almost anyone to create his own graphic art. Unfortunately, to print out these creations, there have been only two apparent choices: to use existing Basic hi-res screen-dump programs that take 20 minutes or more; or to save the picture and switch to C-64 mode to run a 64 screen-print program. Neither alternative is especially convenient. Here is my solution to the problem.

The screen-dump program in Listing 1 is designed to run exclusively on the C-128 in 40-column mode. It prints hi-res or multicolor graphic screens in roughly four minutes, depending on the size of the screen, and works with a 1525 or 1525-compatible printer.

After typing in, saving and running the following program, you may call the routine at any time by pressing the F8 key. (If nothing happens, press the run/stop key and then the F8 key again.) When you call the routine, you must have an image or drawing in graphic area 1 or 2. (If you have a multicolor screen in graphic area 3 or 4, you can safely reproduce it in area 1, since the screen image will be the same as in Multicolor mode.) When you access the routine, it enables the 128's Fast (2MHz) mode and turns off the screen. When the Print routine is finished, it turns the screen back on and returns to Slow (1MHz) mode.

Some of you may be wondering how the program can be so short. This is because it utilizes several routines that are built into the 128's Basic interpreter. I encourage the machine language programmers among you to experiment with these Basic interpreter routines and use them in your programs. Have fun! R

Address all author correspondence to Trent Bills, 7351 Garland, Lincoln, NE 68505.

Listing 1. *C-128 Screen Print program.*

```
5 TRAP9Ø                          :REM*51
1Ø REM 128 SCREEN PRINT BY TRENT
    BILLS                         :REM*172
15 KEY8,"SYS4864"+CHR$(13)
                                  :REM*67
2Ø FORL=DEC("13ØØ")TODEC("13CA")
                                  :REM*116
3Ø READN$:N=DEC(N$):POKEL,N
                                  :REM*82
4Ø NEXT:NEW                       :REM*46
9Ø PRINT"{SHFT CLR}{CRSR DN}"ERR
   $(ER):HELP:END                 :REM*182
1ØØ DATA2Ø,B3,77,78,A9,Ø4,A2,Ø4,
    AØ,ØØ,2Ø,BA,FF,A9,ØØ,2Ø,BD,F
    F,2Ø,CØ,FF,A2,Ø4              :REM*186
11Ø DATA2Ø,C9,FF,A9,Ø8,2Ø,D2,FF,
    A9,ØØ,8D,31,11,8D,32,11,8D,3
    3,11,8D,34,11,85,FA           :REM*248
12Ø DATA85,FB,A9,Ø1,85,FC,2Ø,AF,
    13,A5,FD,FØ,Ø6,A5,FC,Ø5,FB,8
    5,FB,E6,FA,26,FC              :REM*198
13Ø DATAEE,33,11,A5,FA,C9,Ø7,DØ,
    E6,A5,FB,Ø9,8Ø,2Ø,D2,FF,A9,Ø
    Ø,85,FA,A9,Ø1                 :REM*238
14Ø DATA85,FC,AD,33,11,38,E9,Ø7,
    8D,33,11,A9,ØØ,85,FB,EE,31,1
    1,AD,31,11,DØ,Ø3              :REM*176
15Ø DATAEE,32,11,AD,32,11,FØ,BA,
    AD,31,11,C9,4Ø,DØ,B3,A9,ØD,2
    Ø,D2,FF,A9,ØØ                 :REM*2Ø8
16Ø DATA8D,31,11,8D,32,11,AD,33,
    11,AA,E8,E8,E8,E8,E8,E8,E8,8
    A,8D,33,11,C9,CB              :REM*246
17Ø DATADØ,93,2Ø,CC,FF,A9,Ø4,2Ø,
    C3,FF,2Ø,C4,77,58,6Ø,18,2Ø,2
    4,9D,BØ,11,2Ø,7Ø,9C           :REM*38
18Ø DATA2Ø,E8,9C,8D,6D,11,B1,8C,
    2D,6D,11,85,FD,6Ø,A9,ØØ,85,F
    D,6Ø                          :REM*152
```

■

RUN It Right

C-128 (in 40-column mode), 1525 or compatible printer

COMMODORE

C-64-C COMPUTER

INCLUDES GEOS

NEW!

C-64-C

$168

*WITH PURCHASE OF DISK DRIVE

PRINTERS

803-C
COMMODORE
$139

star MICRONICS INC.

$198
LETTER QUALITY DAISYWHEEL

MONITORS

RETAIL $120
$59
MONOCROME MONITOR

RETAIL $299
$139
FULL COLOR

RGB

RETAIL $400
$199

CALL TODAY!

PRO-TECH-TRONICS

6860 Shingle Crk. Pkwy. #201
Minneapolis, MN 55430
(612) 560-6603

QUICK-DELIVERY

VISA

OPEN 7 DAYS A WEEK & EVENINGS

1-800-345-5080

Circle 201 on Reader Service card.

THE COMMODORE IN THE KITCHEN

Enlist the aid of your electronic assistant to make recipe conversions come out right.

By MICHAEL BROUSSARD

Cooking has always fascinated me, because recipes are a lot like programs. After assembling and measuring ingredients, you mix them together at the right time and in the right order, and the end result is something delicious. Food recipes, however, have one major drawback: They're designed to produce a certain number of servings, and usually (at least in my house) that number is not the number needed.

If the recipe makes an extra serving, it's no big deal, unless you really hate leftovers. However, by adjusting the recipe for exactly the number of servings required, there are no leftovers, there's generally less work for the cook, and you save money as well.

Cutting a recipe in half is pretty easy if it serves four, but adjusting a recipe for four so that it feeds six can be a little tricky. What's one-half more than ¾ of a cup?

Until now, I've tried to do these conversions in my head or with a calculator. However, unless I actually write the adjusted measurements down, I catch myself remembering to double some ingredients while forgetting to double others. I always get a sinking feeling when there isn't enough batter in the cake pans, and I don't know which ingredient I forgot to double. Worse yet, the cake then ends up sinking.

Recipe Converter (Recipe, for short) is a program I wrote that takes the guesswork out of adjusting recipes. It's written completely in Basic, so it'll run on a C-64 or a C-128 with no changes.

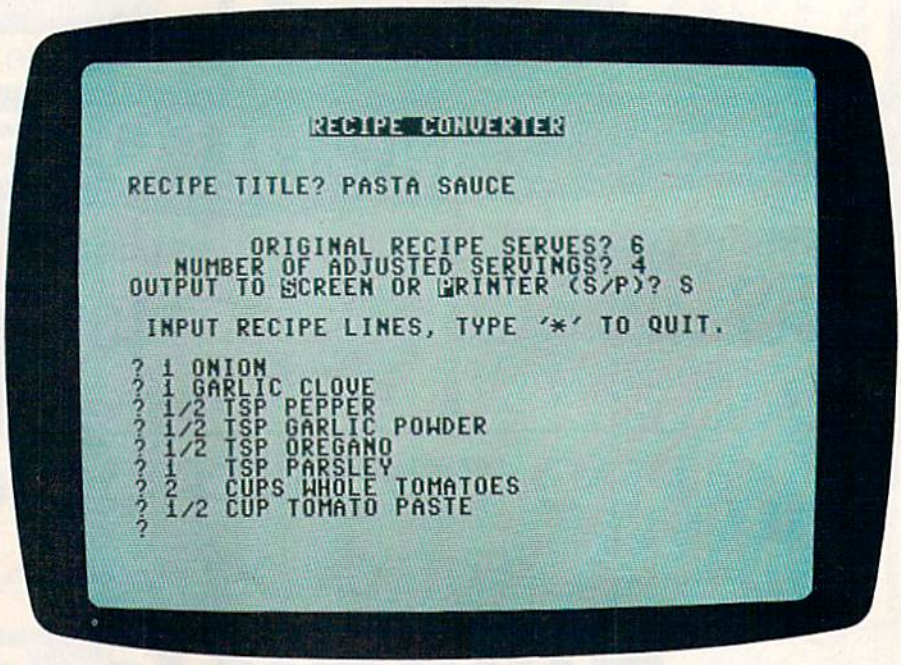
Typing In a Recipe

To use Recipe, type in the program in Listing 1 and save it to disk. When you run it, the program will first ask for the recipe title. After you type in the name, you'll be asked how many the original recipe serves. Enter the number of servings the recipe is designed for and press the return key.

The next prompt will be for the number of adjusted servings. Type in the number of servings you want the recipe to yield and press return.

Then you'll be asked whether you want the output to go to the screen or your printer. Respond with S or P. (The program assumes your printer is device number 4, but you can change this by altering the value assigned to the variable PDEV on the first line of the listing.)

Now it's time to actually type in a recipe. The program will prompt you to enter either the recipe lines or an asterisk (*) to quit. When a question mark appears, begin typing in recipe ingredients, one per line. The program expects each line to begin with a number, followed by a measurement,


RECIPE CONVERTER
RECIPE TITLE? PASTA SAUCE
ORIGINAL RECIPE SERVES? 6
NUMBER OF ADJUSTED SERVINGS? 4
OUTPUT TO SCREEN OR PRINTER (S/P)? S
INPUT RECIPE LINES, TYPE '*' TO QUIT.
? 1 ONION
? 1 GARLIC CLOVE
? 1/2 TSP PEPPER
? 1/2 TSP GARLIC POWDER
? 1/2 TSP OREGANO
? 1 TSP PARSLEY
? 2 CUPS WHOLE TOMATOES
? 1/2 CUP TOMATO PASTE
?

RUN It Right

C-64; C-128

F L I G H T !

From the sophisticated realism, detail, and intellectual stimulation of Flight Simulator...

...to the brute-force fun, thrills and excitement of Jet...

...with new adventures in Scenery Disks...

...SubLOGIC. The State of the Art in Flight.

See Your Dealer. For additional product ordering information or the name of the dealer nearest you, call (800) 637- 4983.

Circle 26 on Reader Service card.

subLOGIC Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995
ORDER LINE: (800) 637-4983
(except in Illinois, Alaska and Hawaii)
Open 7 AM to 9 PM Central Time

followed by the ingredient description. For example, you might type:

```
2 CUPS FLOUR
```

Recipe understands the abbreviations C and CP for cup, so you could also type any of the following:

```
2 C FLOUR
2 C. FLOUR
2 CPS FLOUR
```

All the measurements and abbreviations the program knows are listed in the Data statements in program lines 610 and 620.

As you enter each line, there will be a brief pause as Recipe examines the measurement and performs the conversion. Since the program uses the standard Basic Input statement to get recipe lines, don't use commas or colons in the lines. For example, rather than typing:

```
2 CUPS ONIONS, MINCED
```

use:

```
2 CUPS MINCED ONIONS
```

You can input fractional measurements in two ways. For example, if the recipe calls for 2¾ cups of sugar, you can enter either of these lines:

```
2.75 C SUGAR
2 3/4 C SUGAR
```

Note that in the second example there's a space between the 2 and the ¾. This space is necessary so the program won't interpret the amount as ²³⁄₄, or 5¾, cups!

Occasionally you may run into a recipe with an unusual ingredient amount, such as 1 cup plus 1 tablespoon of flour. In a case like this, just type in the amount as two different ingredient lines:

```
1 CUP FLOUR
1 TBSP FLOUR
```

The Converted Recipe

When you've finished entering your ingredients list, type an asterisk on a line by itself to tell Recipe you're done. The converted recipe amounts will then be output to either the screen or the printer, depending on which you specified when the program started.

You'll notice that when Recipe outputs a line containing a measurement in pints or quarts, it may also include the equivalent cup measure in parentheses. For example, if you were doubling a recipe that calls for 1 cup of milk and 2 cups of flour, the output would read as follows:

```
1 PINT (2 CUPS) MILK
1 QUART (4 CUPS) FLOUR
```

The "quart of flour" appears because Recipe has no way of knowing whether you mean liquid or dry measure when you type "cups," and though milk is indeed measured in pints, we don't usually measure flour in quarts. By providing both, Recipe lets you use the measurement that's most appropriate or convenient or customary.

Recipe will also convert ingredient amounts that aren't standard liquid or dry measurements. For example, if you're doubling 2 eggs and ¾ pound potatoes, the converted amounts would be displayed as:

```
4 EGGS
1 1/2 POUND POTATOES
```

When working with non-standard measurements, Recipe rounds to the nearest eighth. For example, if you want five servings of a recipe for six that calls for 1⅛ pounds of potatoes, you end up mathematically needing 1.1458333 pounds of spuds. Recipe takes the liberty of rounding that to 1⅛ pounds. When working with standard measures, Recipe rounds to the nearest quarter teaspoon or the nearest 5 percent, whichever is most practical.

Here are some more examples of acceptable recipe input lines:

```
1 1/2 TSP. GROUND NUTMEG
2 1/2 TBSP MELTED BUTTER
4 EGGS
1 DASH SALT
```

The following input lines, on the other hand, will cause problems, for the reasons indicated:

```
2 OR 3 CLOVES GARLIC (two measures on the same line)
DASH SALT (a number must come first)
1 TABLESP. WATER (tablesp. is not a valid abbreviation)
```

Although Recipe can't make you a good cook or guarantee that your intimate meal for two will be a success when expanded for a banquet, it will at least provide you with an accurate list of ingredient conversions. If dinner is a flop, it won't be due to your lack of math skills!

I'll be happy to answer any questions you have about Recipe. Please enclose a self-addressed, stamped envelope with your inquiry, and if you can't get the program to run, send along a program listing as well. Ⓡ

Michael Broussard (13136 Lazy Glen Court, Herndon, VA 22071) is a systems engineer for Stratus Computer, a manufacturer of fault-tolerant super-mini computers.

Listing 1. *Recipe Converter program.*

```
1Ø PDEV=4:DEF FNC(X)=INT((X+2)/3)*3:REM*23Ø
2Ø DEFFNZ(V)=V*-1*((V+.Ø1)-INT(V+.Ø1)>=.Ø2)
   -INT(V+.Ø1)*((V+.Ø1)-INT(V+.Ø1)<.Ø2)
                                    :REM*19Ø
12Ø DIM C(16),N$(16),T$(32),NN$(1Ø),M$(18),
   R$(1ØØ),CV(8),CC(11),CC$(11)    :REM*218
13Ø FORJ=1TO16:READC(J):NEXTJ:FORJ=1TO16:RE
   ADN$(J):NEXT                     :REM*168
14Ø FORJ=1TO18:READM$(J):NEXT:FORJ=1TO8:REA
   DCV(J):NEXT                      :REM*28
15Ø FORJ=1TO11:READCC(J):NEXT:FORJ=1TO11:RE
   ADCC$(J):NEXT                    :REM*22
16Ø PRINT"{SHFT CLR}{2 CRSR DNs}"TAB(12)"{C
   TRL 9}RECIPE CONVERTER{2 CRSR DNs}":INP
   UT"RECIPE TITLE";T$              :REM*54
17Ø S1=Ø:INPUT"{2 CRSR DNs}{8 SPACEs}ORIGIN
   AL RECIPE SERVES";X$:S1=VAL(X$):IFS1<1T
   HEN17Ø                           :REM*8
18Ø S2=Ø:INPUT"{3 SPACEs}NUMBER OF ADJUSTED
    SERVINGS";X$:S2=VAL(X$):IFS2<1THEN18Ø
                                    :REM*68
19Ø INPUT"OUTPUT TO {CTRL 9}S{CTRL Ø}CREEN
   OR {CTRL 9}P{CTRL Ø}RINTER (S/P){2 SPAC
   Es}P{3 CRSR LFs}";D$             :REM*126
2ØØ PDEV=-3*(D$="S")-4*(D$="P")     :REM*122
21Ø PRINT"{CRSR DN} INPUT RECIPE LINES, TYP
   E '*' TO QUIT.{CRSR DN}":NL=Ø    :REM*74
22Ø INPUTS$:IFS$="*"THEN35Ø         :REM*178
23Ø GOSUB4ØØ:IFNT>=2THEN25Ø         :REM*22Ø
24Ø PRINT"{CTRL 9}DON'T UNDERSTAND THIS LIN
   E.":GOTO22Ø                      :REM*248
25Ø S$=T$(1):GOSUB46Ø:IFEXTHENPRINT"{CTRL 9
   }AN AMOUNT MUST COME FIRST":GOTO22Ø
                                    :REM*166
26Ø V=X:S$=T$(2):Z=2:GOSUB46Ø:IFEX=ØTHENZ=3
   :V=V+X                           :REM*217
```

GEOS INFO

Another Abacus Best Seller!

GEOS Inside and Out

If you use GEOS then our new book, ***GEOS Inside and Out***, has the info you need.

A detailed introduction is laid out for the novice–beginning with how to load the GEOS operating system...how to create a backup...how to alter the preference manager...how to format disks...learn geoWrite and geoPaint in detail...use geoPaint for designing floor plans or drawing electronic diagrams. Easy-to-understand examples, diagrams and glossary are included to enlighten the beginner.

The advanced user will find more detailed information on GEOS's internals and useful tricks and tips. Add a constant display clock–includes assembly and BASIC listing...complete listing of our **FileMaster** utility (converts your programs to GEOS format with an icon editor) with a line by line explanation...create a single-step simulator for observing memory and the various system registers...learn about windows and how to use them to your advantage...understand GEOS file structure.

If you're just getting started with GEOS or getting to the point of wanting to add your own applications, then ***GEOS Inside and Out*** will help you on your way. $19.95

Coming Soon!

GEOS Tricks & Tips

Continuing the tradition established by our famous C-64 reference library, ***GEOS Tricks & Tips*** is a collection of helpful techniques for anyone who uses GEOS with their Commodore. It's easy to understand without talking down to the reader, and detailed in the applications of the routines. Includes a font editor to create up to 64 point text and a machine language monitor. A perfect companion volume to ***GEOS Inside and Out***. Available Second Quarter. $19.95

GEOS, geoWrite, geoPaint are tradenames of Berkeley Softworks.

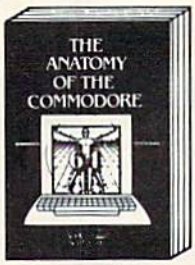
To receive your copy of ***GEOS Inside and Out*** and/or ***GEOS Tricks & Tips***, call now for the name of the dealer or bookstore near you. Or order directly using your Visa, MC or Amex card. Add $4.00 per order for shipping and handling. Foreign orders add $10.00 per book. Call or write today for your free catalog. Dealer inquires welcome—2000 nationwide.

Order both today!

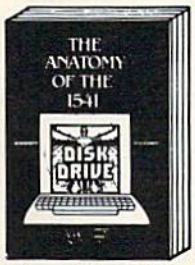
You Can Count On **Abacus**

P.O. Box 7219 • Dept. R3
Grand Rapids, MI 49510
Telex 709-101 • Fax 616/241-5521
Phone 616/241-5510

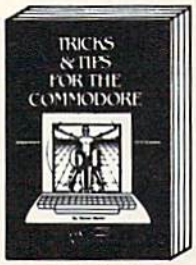
Just a few of our books...



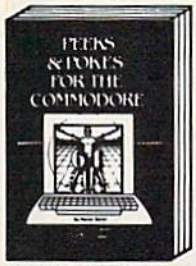
Anatomy of the C-64
Insider's guide to '64 internals. Graphics, sound, I/O, kernal, memory maps, and much more. Complete commented ROM listings. 300pp $19.95



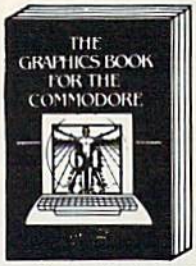
Anatomy of the 1541 Drive
Best handbook on this drive, explains all. Filled with many examples programs, utilities. Fully commented 1541 ROM listings. 500pp $19.95



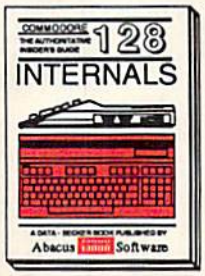
Tricks & Tips for the C-64
Collection of easy-to-use techniques: advanced graphics, improved data input, CP/M, enhanced BASIC, data handling and more. 275pp $19.95



Peeks & Pokes for the 64
Includes in-depth explanations of PEEK, POKE, USR, and other BASIC commands. Learn the "inside" tricks about your '64. 200pp $14.95



Graphics Book for the C-64
Best reference, covers basic and advanced graphics. Sprites, Hires, Multicolor, 3D-graphics, IRQ, CAD, projections, curves. 350pp $19.95



C-128 INTERNALS
Important C-128 information. Covers graphic chips, MMU, I/O, 80 column graphics and fully commented ROM listings, more. 500pp $19.95

1571 INTERNALS
Essential reference. Internal drive functions. Explains various disk and file formats. Fully-commented ROM listings. 450pp $19.95

C-128 TRICKS & TIPS
Fascinating and practical info on the C-128. 80-col hires graphics, bank switching. 300 pages of useful information for everyone. $19.95

C-128 PEEKS & POKES
Dozens of programming quick-hitters, techniques on the operating system, stacks, zero page, pointers, and BASIC. 240pp $16.95

C-128 BASIC 7.0 Internals
Get all the inside info on BASIC 7.0. This exhaustive handbook is complete with fully commented BASIC 7.0 ROM listings. $24.95

Call now for the name of your nearest dealer. Or order direct with your credit card by calling 616/241-5510. Add $4.00 per order for S&H. Foreign add $12.00 per book.

Other books and software also available. Call or write for your **free catalog**. Dealers inquires welcome—over 2000 nationwide.

Commodore 64 and Commodore 128 are trademarks of Commodore Ltd.

Abacus

P.O. Box 7219
Dept. R3
Grand Rapids, MI 49510
Telex 709-101 • Fax 616/241-5521
Phone 616/241-5510

Listing 1 continued.

```
27Ø IFZ>NT THEN24Ø                          :REM*57
28Ø P$=T$(Z):GOSUB54Ø                       :REM*55
29Ø GOSUB 66Ø:GOTO3ØØ                       :REM*27
3ØØ IFZ>NTTHEN34Ø                           :REM*89
31Ø FOR J=Z TO NT:X$=X$+" "+T$(J)           :REM*161
32Ø IF(J=Z)AND(J=NT)AND(P=Ø)AND(V>1)AND(RIG
    HT$(T$(J),1)<>"S")THENX$=X$+"S":REM*113
33Ø NEXT                                    :REM*85
34Ø NL=NL+1:R$(NL)=X$:GOTO22Ø               :REM*157
35Ø CLOSE3:OPEN3,PDEV                       :REM*149
36Ø PRINT#3:PRINT#3:PRINT#3:W=8Ø:IFPDEV=3TH
    ENW=4Ø:PRINT#3,"{SHFT CLR}"             :REM*69
37Ø PRINT#3,SPC((W-LEN(T$))/2*-(LEN(T$)<=W)
    )T$                                     :REM*149
38Ø X$="(SERVES"+STR$(S2)+")":PRINT#3,SPC((
    W-LEN(X$))/2)X$:PRINT#3:PRINT#3         :REM*9
39Ø FORJ=1TONL:PRINT#3,R$(J):NEXT:PRINT#3:C
    LOSE3:END                               :REM*149
4ØØ NT=Ø:J=1:A$="":F=1                      :REM*165
41Ø IF J>LEN(S$)THEN ON F GOTO 45Ø,44Ø
                                            :REM*63
42Ø B$=MID$(S$,J,1):IFB$=" "THENJ=J+1:ON F
    GOTO 41Ø,44Ø                            :REM*145
43Ø A$=A$+B$:J=J+1:F=2:GOTO41Ø              :REM*213
44Ø NT=NT+1:T$(NT)=A$:A$="":F=1:GOTO 41Ø
                                            :REM*163
45Ø RETURN                                  :REM*253
46Ø X=Ø:NN=Ø:J=1:A$="":F=1:EX=Ø             :REM*45
47Ø IF J>LEN(S$)THEN ON F GOTO 51Ø,5ØØ
                                            :REM*157
48Ø B$=MID$(S$,J,1):IF(B$>="Ø"ANDB$<="9")OR
    B$="."THENA$=A$+B$:J=J+1:F=2:GOTO47Ø
                                            :REM*231
49Ø IF B$<>"/"THEN EX=1:RETURN              :REM*113
5ØØ NN=NN+1:NN$(NN)=A$:A$="":J=J+1:F=1:GOTO
     47Ø                                    :REM*225
51Ø IF NN>2 OR VAL(NN$(1))=ØTHEN EX=1:RETUR
    N                                       :REM*17
52Ø X=VAL(NN$(1)):IF NN>1 THEN X=X/VAL(NN$(
    2))                                     :REM*86
53Ø RETURN                                  :REM*78
54Ø L=LEN(P$):X$=MID$(P$,L):IFX$="." THEN I
    FL>1 THENP$=LEFT$(P$,L-1)               :REM*154
55Ø L=LEN(P$):X$=MID$(P$,L):IFX$="S" THEN I
    FL>1 THENP$=LEFT$(P$,L-1)               :REM*58
56Ø P=Ø:FORJ=1TO18:IFP$=M$(J)THENP=FNC(J):R
    ETURN                                   :REM*214
57Ø NEXTJ:RETURN                            :REM*14
58Ø DATA 1,2,4,8,12,24,36,48,64,96,128,144,
    192,384,768,1536                        :REM*58
59Ø DATA 1/4 TSP,1/2 TSP,1 TSP,2 TSP,1 TBSP
    ,2 TBSP,3 TBSP,1/4 CUP,1/3 CUP          :REM*1ØØ
6ØØ DATA 1/2 CUP,2/3 CUP,3/4 CUP,1 CUP,1 PI
    NT, 1 QUART, 1 GALLON                   :REM*14Ø
61Ø DATA T,TSP,TEASPOON,TB,TBSP,TABLESPOON,
    C,CP,CUP,P,PT,PINT                      :REM*116
62Ø DATA Q,QT,QUART,G,GAL,GALLON            :REM*134
63Ø DATA 4,12,192,384,768,1536,Ø,Ø          :REM*38
64Ø DATA Ø,.125,.25,.333333,.375,.5,.625,.6
    66666,.75,.875,1                        :REM*13Ø
65Ø DATA ,,1/8,1/4,1/3,3/8,1/2,5/8,2/3,3/4,
    7/8,1                                   :REM*116
66Ø V=FNZ(V)*(S2/S1):IFP=ØTHENGOSUB88Ø:RETU
    RN                                      :REM*184
67Ø Z=Z+1:J=FNC(P)/3:IF(J<6)OR(S1>S2)THEN69
    Ø                                       :REM*94
68Ø V=FNZ(V):GOSUB88Ø:X$=X$+" GALLON"+MID$(
    "S",1,-1*(V<>1)):GOSUB78Ø:RETURN
                                            :REM*1Ø6
69Ø V=FNZ(V+.ØØ5*-1*(INT(V)=V))*CV(J):X$=""
    :VV=V*-1*(V>383OR(P=9ANDS1<S2)):VX=V
                                            :REM*146
7ØØ J=1                                     :REM*146
71Ø IFC(J)<=VTHENJ=J+1:IFJ<17THEN71Ø:REM*5Ø
72Ø IFJ=17THENV=V/1536:GOTO68Ø              :REM*88
73Ø J=J-1:X$=X$+N$(J):V=FNZ(V-C(J)):IF VV A
    ND V<48 THEN GOSUB 78Ø                  :REM*128
74Ø IF V>=1 AND V/VX>.Ø5 THEN X$=X$+" PLUS
    ":GOTO7ØØ                               :REM*172
75Ø IF VV THEN GOSUB 78Ø                    :REM*194
76Ø IF X$=""THEN X$=X$+"1 DASH"             :REM*182
77Ø RETURN                                  :REM*63
78Ø K=INT(VV/192):IFK<2THENVV=Ø:RETURN
                                            :REM*187
79Ø X$=X$+" ("+MID$(STR$(K),2):VV=VV-K*192:
    K=1                                     :REM*99
8ØØ IFC(K)<=VVTHENK=K+1:GOTO8ØØ             :REM*59
81Ø VV=Ø:IFK>8THENX$=X$+" "+N$(K-1)+"S)":RE
    TURN                                    :REM*1Ø7
82Ø X$=X$+" CUPS)":RETURN                   :REM*145
83Ø IF VV=Ø THEN RETURN                     :REM*75
84Ø X$=X$+" ("+MID$(STR$(INT(VV)),2)+" "
                                            :REM*67
85Ø K=1:J=VV-INT(VV):IFJ=ØTHENX$=X$+"CUPS)"
    :RETURN                                 :REM*159
86Ø IF (J-CC(K))>.Ø5 THEN K=K+1:GOTO86Ø
                                            :REM*119
87Ø X$=X$+N$(K)+"S)":RETURN                 :REM*249
88Ø V1=INT(V):V2=V-V1:J=1                   :REM*127
89Ø IF(CC(J)-V2)>.Ø625THEN92Ø               :REM*37
9ØØ J=J+1:IFJ<11THEN89Ø                      :REM*5
91Ø X$=MID$(STR$(V1+1),2):RETURN            :REM*45
92Ø X$="":IFV1>ØTHENX$=MID$(STR$(V1),2)+"{S
    HFT SPACE}"                             :REM*97
93Ø X$=X$+CC$(J):RETURN                     :REM*253
```

■

V3.0 ULTRABYTE DISK NIBBLER

NEW SIXTH GENERATION ULTRABYTE COPIER FOR COMMODORE 64 and 128 (in 64 mode)

- **Copies 99+% of protected software in 2 min. or less includes parameters for 160 recent, hard-to-copy disks. (Send stamped envelope for list). Includes fast file copy program**
- **Uses 1 or 2 1541 /1571 drives, or MSD dual drive**
- **More powerful than KeyMaster, Diskbuster, Copy II, Superkit, 21 Second, Clone or Cracker**
- **Copies itself (for this reason, no refunds given)**

SPECIAL — BUY A NIBBLER V3.0 AND GET YOUR CHOICE OF A FREE $14.95 PROGRAM
$39.95 plus $4.00 shipping

Disk Surgeon -- disk utility $14.95
Ultramail -- mail list and label printer.....$14.95
McMurphy's Mansion -- text adventure $14.95
Handy-Capper -- race handicap system ...$14.95

(Above may be ordered separately for $14.95 plus $4.00 shipping. Foreign orders add $2.00)

Mastercard, Visa, Check or M.O., Calif. add 6.5% ($2.60) sales tax. Foreign orders / COD add $2.00. Payment must be in U.S. funds

UPDATES - Return your original Ultrabyte disk with $10.00 plus $4.00 shipping. Foreign add $2.00

To order, write or call 24 hr. order line. For info. write.

ULTRABYTE (818) 796 - 0576
P.O. Box 789 LaCanada, CA 91011 USA

DEALERS & DISTRIBUTORS WANTED

Circle 132 on Reader Service card.

'64 or '128 Software

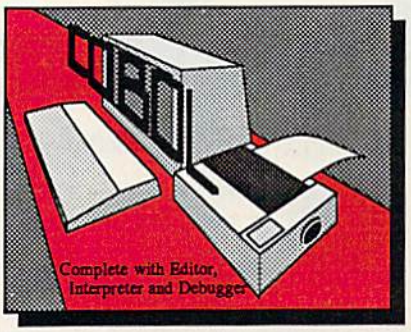
Take your Pick!

BASIC Compiler

Complete BASIC compiler and development package. Speed up your programs 3x to 35x. Compile to machine code, compact p-code or both. A great package that no software library should be without. '128 version: 40 or 80 col. monitor output and FAST mode operation, extensive 80-page programmer's guide. **C-64 $39.95**
C-128 $59.95

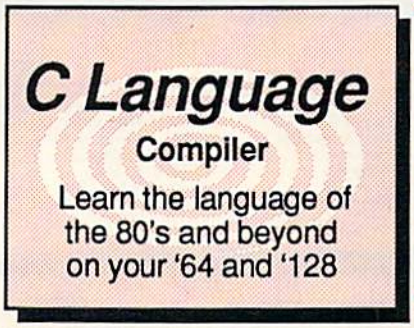
COBOL

Now you can learn COBOL, the most widely used commercial programming language, on your 128 or 64. COBOL Compiler package comes complete with syntax-checking editor, interpreter and symbolic debugging aids. New '128 version works with 40/80 column monitors and is quicker than the '64 version. **C-64 $39.95**
C-128 $39.95



Super C

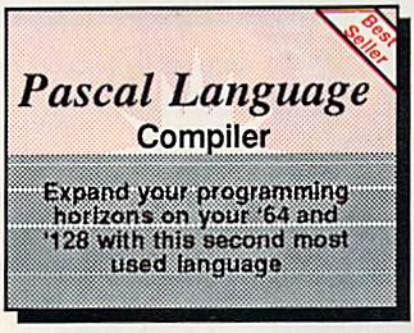
For software development or school. Learn the C language on the '64 or '128. Compiles into *fast* machine code. Combine M/L & C using CALL; 51K available for object code; Fast loading; Two standard I/O librarys plus math & graphic libraries. Added '128 features: CP/M-like operating system; 60K RAM disk. **C-64 $59.95**
C-128 $59.95



New C-128 Version!

Super Pascal

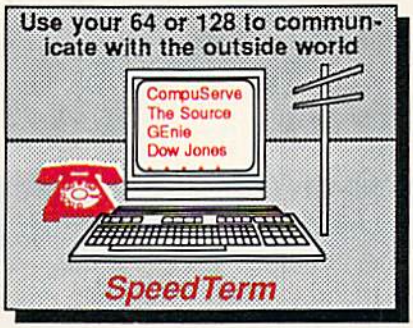
Complete system for developing applications in Pascal. Extensive editor. Standard J & W compiler. Graphics library. If you want to learn Pascal or develop software using the best tool available, Super Pascal is your first choice. Added '128 features: RAM disk; 100K source/one drive or 250K/two; 80/40 column. **C-64 $59.95**
New! **C-128 $59.95**


Best Seller
Pascal Language
Compiler
Expand your programming horizons on your '64 and '128 with this second most used language

New C-64 Version!

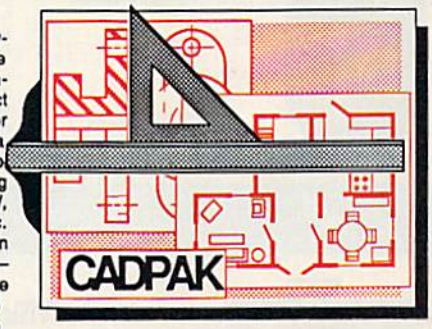
Speedterm

Let your 64 or 128 communicate with the outside world. Obtain information from various computer networks. Flexible, command driven terminal software package. Supports most modems. Xmodem and Punter transfer protocol. VT52 terminal emulation with cursor keys, large 45K capture buffer & user definable function keys. **Contains both versions**
C-64 & C-128 $39.95



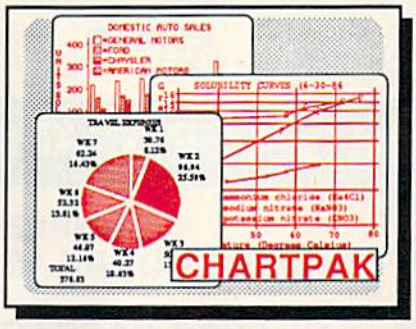
Cadpak

Easy-to-use interactive drawing package for accurate graphic designs. Dimensioning features to create exact scaled output to all major dot-matrix printers. Input via keyboard or lightpen. Two graphic screens for COPYing from one to the other. DRAW, BOX, ARC, ELLIPSE, etc. available. Define your own library of symbols/objects–store up to 104 separate objects. **C-64 $39.95**
C-128 $59.95



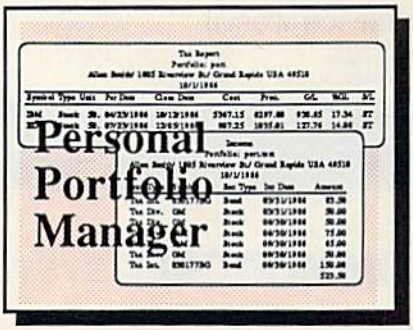
Chartpak

Create professional quality charts *fast*— without programming. Enter, edit, save and recall data. Interactively build pie, bar, line or scatter graph. Set scaling, labeling and positioning. Draw charts 8 different formats. Statistical routines for average, standard deviation, least squares and forecasting. Use data from spreadsheets. Output to most printers. **C-64 $39.95**
C-128 $39.95



PPM

Comprehensive portfolio management system for the 64 and 128. Manage stocks, bonds, mutual funds, T-bills; record taxable or non-taxable dividends & interest income; reconcile each brokerage account cash balance with the YTD transaction file; on-line quotes through Dow Jones or Warner. Produces any type of report needed to analyze a portfolio or security. **C-64 $39.95**
C-128 $59.95



Call **now** for the name of the dealer nearest you. Or order directly form Abacus using your MC, Visa or Amex card. Add $4.00 per order for shipping. Foreign orders add $12.00 per item. Call (616) 241-5510 or write for your **free** catalog. 30-day money back software guarantee. Dealers inquires welcome–over 2000 dealers nationwide.

Abacus

P.O. Box 7219 Dept R3 Grand Rapids, MI 49510
Phone 616/241-5510 • Telex 709-101 • Fax 616/241-5021

Circle 8 on Reader Service card.

LYCO COMPUTER
Marketing & Consultants

COMMODORE SOFTWARE

Broderbund Software®

Printshop	26.75
Graphics Lib. EA	16.75
P.S. paper	12.95
Bank St. Writer 128K	42.75
Carmen Sandiego	22.75
Karateka	22.75
P.S. Comp	24.75
Science Kit	35.95

MicroProse

F-15	$21.95
Silent Service	21.95
Gunship	21.95
Top Gunner	18.95

MICROLEAGUE

Baseball	24.75
Gen Mgr	24.75
Stat Compiler	18.75

SPRINGBOARD (C-64)

Newsroom	32.75
Clip Art 1	18.75
Clip Art 2	24.75

ACTIVISION

Basketball	22.75
Tass Times	22.75
Rocky Horror	18.75

ACTIVISION

Labrynth	$22.75
Titantic	22.75
Aliens	24.75
Hacker	18.75
Hacker II	20.75
Little People	20.75
Game Maker	24.75
Library	
Sports	13.75
Sci-Fi	13.75
Music Studio	22.75

BATTERIES INCLUDED

Consultant	32.95
Paperclip w/spell pk	48.95
Paperclip II	(NEW)

Xetec, Inc.

Font Master II 64	32.95

Firebird

Colossus IV	$22.75
Pawn	28.75
Elite	22.75
Talking Teacher	28.75

ACCESS Software Incorporated

Leader Board	$24.75
Tournament Dsk 1	15.75
Executive Dsk	15.75
Triple Pak	15.75
Mach 128	29.75
10th Frame	24.75

SSI

Computer Quarterback	$22.75
Field of Fire	22.75
Gemstone Healer	18.95
Phantasie II	22.75
50 Missions	22.75
R.F.D. 1985	22.75

subLOGIC

Jet	$22.75
Scenery Dsk	17.95
Flight Sim II	29.95
Football	25.95
Baseball	32.75

INFOCOM

Leather Goddess	20.75
Moon Mist	20.75

JOYSTICKS

Bat handle	16.75
Boss	11.99
Super 3-way	19.99
TAC-3	9.95

HI TECH

Cardware	8.95
Partyware	8.95
Heartware	8.95
Ware with All	12.95
Holiday Paper	8.95

TIMEWORKS

Data Mgr	42.95
Swifcalc	42.95
Wordwriter	42.95
A/Payable	38.95
A/Receivable	38.95
General Ledger	38.95
Inventory	38.95
Payroll	38.95

EPYX

Movie Monster	$24.75
Vorpol Kit	22.75
Fast Load	24.75
Summer Games II	24.75
Super Cycle	24.75
World Games	24.75
Football	24.75
Multi Plan	38.75
Winter Games	24.75
Champ Karate	20.75
Destroyer	24.75

AMIGA SOFTWARE

SSI

Computer Baseball	$22.75

UNISON WORLD

Printmaster	$24.75
Art Gallery I	20.75
Art Gallery II	20.75

ACTIVISION

Hacker	$26.75
Music Studio	32.75
Basketball	28.75
Hacker II	29.75

subLOGIC

Flight Sim II	$29.95
Jet	CALL

ISD

VIP Professional	$115.00

MicroProse

Silent Service	$24.75
F-15 (NEW)	24.75

INFOCOM

Leather Goddess	$24.75
Moonmist	24.75

ACCESS Software Incorporated

Leader Board	$24.75
Tournament 1	13.75
Portal	28.75

Firebird

Pawn	$28.75

SAVE ON THESE SYSTEM SPECIALS!

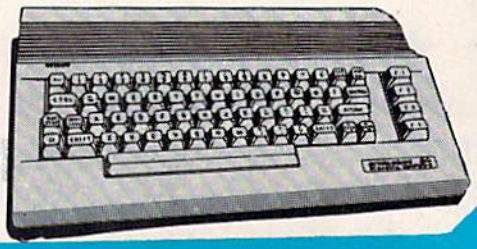
COMMODORE 64 SYSTEM SPECIAL

- ★ Commodore 64 C Computer
- ★ 1541 C Drive
- ★ Seikosha SP-1000 VC Printer
- ★ 2 Joysticks

90 Day Warranty

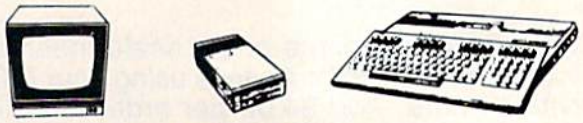
REG. $789

SALE $525



COMPLETE COMMODORE 128 SYSTEM!

LYCO PACKAGE DEAL!



SYSTEM INCLUDES!

- ★ COMMODORE 1902 A MONITOR
- ★ COMMODORE 1571 DRIVE
- ★ COMMODORE 128 COMPUTER

$755.00

LYCO COMPUTER
Marketing & Consultants

LYCO'S FULL PRINTER LINE!

star micronics

1 - Year Waranty

NX-10C $209

STAR MICRONICS
NX 10C	209
NL-10	229
NX-10	SPECIAL
NB-15	CALL
SD-15	438
SR-10	469
NX-15	339

PANASONIC
1080i	199
1091i	269
1092i	(NEW)
1592	419
1595	549
3131	375
3151	SAVE
1080 AP	239

OKIDATA
Okimate 20 ST	189
120 NLQ	225
182	214
192+	365
193+	559
292	449
293	599

EPSON
LX 86	225
FX 85	355
EX 800	479
EX 1000	669
FX 286	479
LQ 800	529
LQ 1000	729

TOSHIBA
321 P/S	479
351 sheet feeder	529
P 341 P	669
P 341 S	699
P 351 +	999

SAVE WITH THESE PRICES

SEIKOSHA
SP-1000 VC (C-64)	154
SP-1000 A centronics	185
SP-1000 IBM	185
SP-1000 AS RS-232	185
SP-1000 AP APIIc	185
BP-1300 AI	419
BP-5420	1075
BP-5300 AI	CALL
Color Kit	119
BP-5420 ribbon	12.50
SP-1000 ribbon	8.50

CITIZEN
120-D	179
MSP-10	285
MSP-15	385
MSP-20	325
MSP-25	485
Premier 35	469

JUKI
Juki 6100	399
Juki 5510	435
Juki 6300	739
RS-232 serial board	55

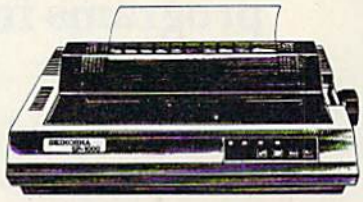
SILVER REED
EXP 420 P	209
EXP 600 P	489
EXP 800 P	649
EXP 770	740

DIABLO
D25	549
P-32 CQ1	699
635	1029
D-80 1F	2395

LEGEND
808	159
1080	199
1380	229
1385	289

SEIKOSHA

2-Year Warranty



SP-1000 VC

$154

INTERFACING
ORANGE MICRO

Grappler CD 69

XETIC

Super Graphix 64.64
Super Graphix Sr. 45.64

TYMAC

Connection 49

DSI

DPI 44.95

DISKETTES

	5¼	3.5
MAXELL		
SSDD	9.99	16.99
DSDD	12.99	23.99
BONUS		
SSDD	6.99	—
DSDD	7.50	—
SKC		
SSDD	8.50	14.99
DSDD	9.50	19.99

LYCO'S WAREHOUSE provides you access to the Nation's largest inventory!

DRIVES
COMTEL

Enhancer 2000 149

INDUS

GT-6X 179

COMMODORE

1541C, C1571 ..... CALL

TEKNIKA
MJ-22	249
MJ-305 RGB	309
MJ-503	529

ZENITH
ZVM 1220	89
ZVM 1230	89
ZVM 1240	139
ZVM 1330	385

MONITORS
COMMODORE

1902 Colcr	289
1802 C	215

PANASONIC

TR-122 MYP 12" Amber TTL	139
TR-122-M9P 12" Green TTL	139

HITACHI
MM-1218 12" Green	99
MM-1220 12" TTL Amber	129
CM-1216 D 12" RGB	385
CM-1455 S 13"	525

THOMSON

365 12 RGB	CALL
Monochrome from	89

HI RES RGB AVAILABLE!

MODEMS
SUPRA

1064 ..... 49.95

COMMODORE

1670 129

CALL TOLL FREE 1-800-233-8760

IN PA 717-494-1030
CUSTOMER SERVICE 717-494-1670
or send to
Lyco Computer
P.O. Box 5088
Jersey Shore, PA
17740

MASTERCARD
VISA

HOURS
Mon-Thur 9 AM-8 PM
Fri 9 AM-6 PM
Sat 10 AM-6 PM

Risk Free Policy

In-stock items shipped within 24 hrs of order. No deposit on C.O.D. orders. Free shipping on prepaid cash orders within the continental U.S. Volume discounts available. PA residents add sales tax. APO, FPO and international orders add $5.00 plus 3% for priority mail. Advertised prices show 4% discount for cash, add 4% for Master Card and VISA. Personal checks require 4 weeks clearance before shipping. We cannot guarantee compatibility. We only ship factory fresh merchandise. Ask about UPS Blue and red label shipping. All merchandise carried under manufacturer's warranty. Return restriction applicable. Return authorization required. All items subject to change without notice.

ReRUN • SPECIAL OFFER • 30% off!

ADD POWER, ADD VALUE

TO YOUR C-64 OR C-128* by adding *all* the top rated programs from RUN!

Get business and home applications . . . telecommunications . . . utilities . . . games . . . graphics . . . music . . .

All on ready-to-run quality disks!

Now you can get *all* the valuable programs—not just selected programs—published in RUN magazine with Bi-Monthly ReRUN. Each super disk is packed with two months' worth of top rated programs for your Commodore. Here is a low-cost treasure trove of helpful and interesting applications, productive utilities and enjoyable, challenging games, all ready-to-run on quality disks you can just load and go!

YES! I want to add power and value to my Commodore. Send me:

☐ Full year (6 issues) subscription to ReRUN for $89.97—a full 30% off the single issue price.
☐ January/February ReRUN single issue just $21.47

☐ Payment enclosed ☐ VISA ☐ AE ☐ MC

Card # Exp. Date

Signature

Name (print)

Address

City State Zip

Foreign airmail, please add $1.50 per item or $25 per subscription. US funds drawn on US banks only. Please allow 4–6 weeks for delivery.
January/February Edition Available in February 1987.

Pre-payment orders *only*!

Mail to: ReRUN • Elm Street • Peterborough, NH 03458

3-87

Exclusive, BONUS PROGRAM, too!

As an extra BONUS, each ReRUN Bi-Monthly disk features a previously unpublished program, specially selected by RUN experts to update your Commodore software library. The high-quality program is included FREE on every ReRUN Bi-Monthly disk.

Put RUN Quality Programs to Work for You, INSTANTLY!

Here's the ideal way to multiply the value of RUN magazine to you, while you increase the value of your Commodore for your business, home, education and entertainment computing needs. No need to spend hours keyboarding RUN program listings, and fixing your typing errors. Now the programs you want are all right here on bug-free disks, ready to run! Each issue comes with its own color documentation booklet, so you can boot up in just minutes!

Get All Six Bi-Monthly Disks and SAVE 30% OFF!

Enter your subscription now to receive all six ReRUN Bi-Monthly disks, and you'll *save a full 30% off* the single issue price, making this one of the best software bargains in the industry! You'll get all six disks for just $89.97, including postage and handling. Or, order ReRUN disks individually at $21.47 per disk.

Top rated programs . . . plus 30% savings off the single issue price. Two good reasons to get ReRUN Bi-Monthly working for you all year long! Complete the coupon and mail today or call ☎ 1-800-258-5473 (in NH, Dial 1-924-9471).

*Includes 128 Mode programs

MONTGOMERY GRANT

115 Nassau St. Between Beekman & Ann Sts. N.Y., N.Y. 10038 (212)732–4500 open Mon–Fri: 8:30am – 6:30pm Sat: 9:30am – 6pm Sun: 9:30am – 5:30pm

Penn Station/Amtrack Level Beneath Madison Sq. Garden, N.Y., N.Y. 10001 (212) 594–7140 open Mon–Fri: 8:30am – 8pm Sat. & Sun: 9:30am – 7pm

PHONE and MAIL ORDERS ONLY (212) 732–4500
Call Collect

VISA MasterCard DISCOVER

ALL COMPUTERS & PERIPHERALS COME COMPLETE WITH AC ADAPTOR, OWNER'S MANUAL AND ALL CONNECTING CABLES.

ALL MERCHANDISE IS BRAND NEW AND FACTORY FRESH, COMPLETE WITH MFR. U.S.A. WARRANTY.

commodore 128

128 K RAM Powered Personal Computer

$245

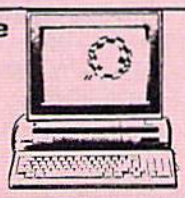
commodore 64-C

NEW

64 K RAM Powered Home Computer

$169.95 *With Geos Program!*

commodore AMIGA



512 K RAM Powered Computer System

$799

PERIPHERALS

NEW

1541C NEW Disk Drive

$169.95

1541 Disk Drive

$149.95

1571 Disk Drive

$219.95

1802 Color Computer Monitor

$189.95

1902 RGB Color Monitor

$249.95

commodore COMPUTER PACKAGES

Get it all together & save!

64C COLOR PACKAGE

- Commodore 64C Computer
- Commodore 1541 Disk Drive
- Commodore Color Printer
- Color Monitor

With Geos Program!

$549.95

64 COMPLETE PACKAGE

- Commodore 64 Computer
- Commodore 1541 Disk Drive Printer
- Commodore Color Printer
- 12" Computer Monitor

$369.95

128 COMPLETE PACKAGE

- Commodore 128 Computer
- Commodore 1541 Disk Drive
- 12" Computer Monitor
- Commodore Color Printer

$499.95

TO SUBSTITUTE 1571 for 1541 ADD $70

128 DELUXE PACKAGE

- Commodore 128 Computer
- Commodore 1571 Disk Drive
- Commodore 1902 Color Monitor
- Commodore 80 Column Printer

$759.95

GEOS Program $39.95

APPLE IIC PACKAGE

- Apple IIC Keyboard
- Built–in Disk Drive
- Apple Monitor
- Apple Monitor Stand
- All Cables and Adaptors
- 10 Floppy Diskettes

$649.95

COMPUTER PRINTERS

commodore MPS–803 PRINTER **$99.95**

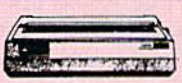
commodore MPS–1200 PRINTER **$249.95**

star NP–10 HIGH SPEED PRINTER **$189**

STAR POWER TYPE Daisy Wheel Letter Quality **$229.95**

STAR NX–10 Printer.....$199

EPSON HOMEWRITER 10 **$169.95**



OKIDATA 120 PRINTER **$199.95**

OKIMATE 20 with Plug 'n' Print **$189.95**

PERIPHERALS

1660 Phone Modem **$39.95**

1670 Automodem.....$129.95

1350 "Mouse" for any Commodore Computer **$39.95**

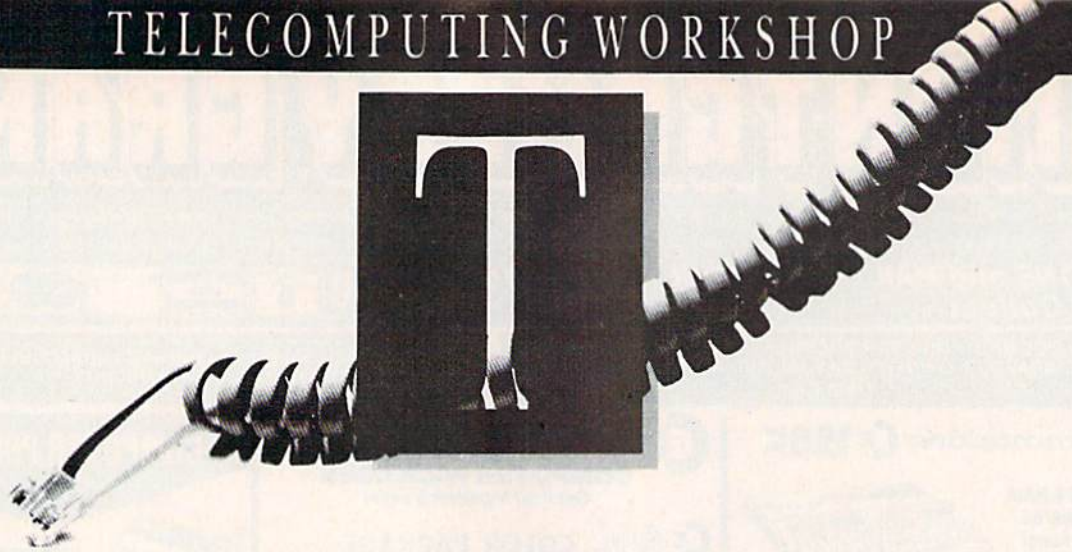
1700 128 K Expansion Module.....$89

1750 512 K Expansion Module $169

"MAGIC VOICE" Module ... $49.95

Certified check, bank check, Mastercard, Visa, Am–Ex, Diner's Club Carte–Blanche, and Discover Card accepted. Non–certified checks must wait 4–6 weeks for bank clearance. Money orders are non–certified checks. N.Y. residents add 8 and 1/4% sales tax. Prices and availability subject to change without notice–so call before placing your order. Not responsible for typographic errors. Returns of defective merchandise must have prior return authorization number.

Circle 98 on Reader Service card.



By DAVID BRADLEY

Telecomputing Workshop is a monthly column dedicated to the needs of RUN *readers who are using, or intend to use, a Commodore computer for telecommunications. We invite you to submit your questions or comments to:*

David Bradley
Telecomputing Workshop
c/o RUN *magazine*
80 Elm St.
Peterborough, NH 03458

I tried to access *RUN*'s bulletin board, the RUNning Board, while using the Total Telecommunications disk and a TeleLearning modem. After I went through the whole procedure, the terminal said READY, but nothing happened. I tried just waiting, as well as pressing return first once and then twice, but to no avail. What was I doing wrong?

I've also been trying to access CompuServe with my Commodore 1670 modem. I've changed the baud rate on the Total Telecommunications disk, but it won't dial the number (the screen shows it dialing, but the modem isn't actually doing so). Do I have to change other parameters to go from 300 baud to 1200 baud for CompuServe?

Chris A. Raudonis
Hudson, NH

To get onto the RUNning Board, your terminal parameters should be set at 300 baud, one stop bit, no parity, full duplex and a word length of 8 bits. Then, you or your system should dial the number 1-603-924-9704. When you get a carrier, press the return key. You'll be asked if you require line feeds, and then you're in. If you get through and access the carrier but nothing happens, try again in a couple of days. A power failure or something else might be crippling the system temporarily.

The reason the Total Telecommunications program isn't dialing with the 1670 modem is that the TeleLearning modem and the 1670 don't dial in the same way. The TeleLearning modem dials only pulse, and the program must tell it when to do each pulse. The 1670 is a little smarter. You just tell it that you want to dial a number (pulse or tone), and it does the rest.

To make the 1670 dial from just about any terminal program, go into Terminal mode, enter AT (short for "attention") and press the return key. The modem should reply by saying OK. When the modem receives the AT, it knows you want to talk to it. Remember that all commands sent to the modem must begin with AT.

To make the 1670 dial pulse, enter ATDP followed by the number to dial. To dial using tones, enter ATDT followed by the number to dial. Thus, to call the RUNning Board using pulse, you would enter ATDP16039249704 and press the return key. You should hear a dial tone and then the number being dialed. When a carrier is received, the modem will make the connection.

Many terminal programs, both public domain and commercial, support the 1670. I recommend Bobs-Term Pro from Progressive Peripherals & Software, 464 Kalamath St., Denver, CO 80204; 303-825-4144. It's available for the C-64 and the C-128.

If you'd prefer a public domain terminal program, Public Domain Solutions offers a disk of them for the 1670. Send $5, plus $1 for postage and handling, to Public Domain Solutions, PO Box 832, Tallevast, FL 34270.

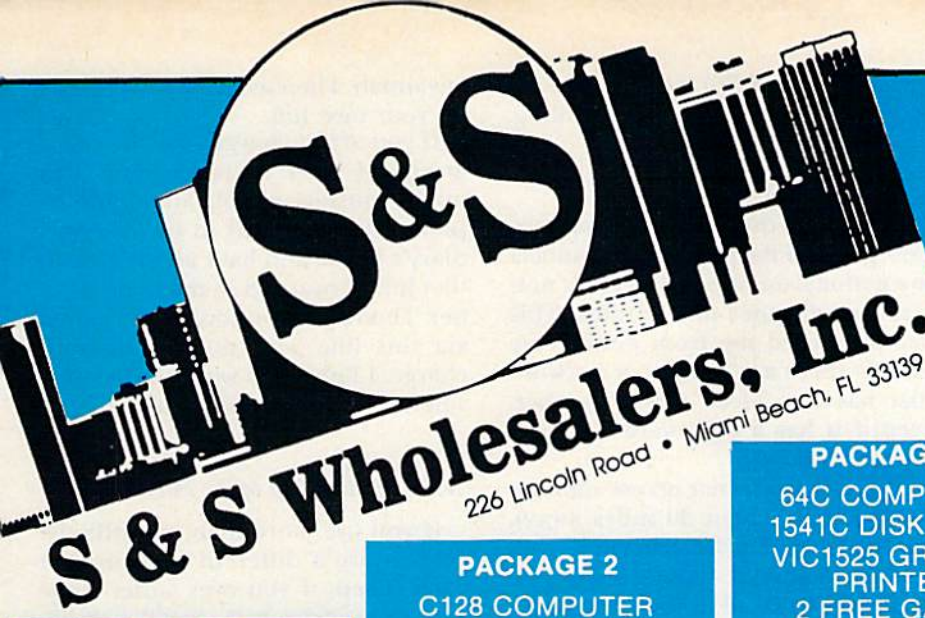
I have a Hayes Smartmodem 300 and need an RS-232 adapter to make it work on my C-64. Do you know where I can obtain one?

Clint Roudenbush
Dallas, TX

I own a C-64 that I've been using with a 300-baud modem for the past three years. I recently acquired a 1200-baud modem manufactured by Racal-Vadic (model VA212LC). This modem is supposed to be compatible with the Hayes. Can I hook it up to my C-64, and, if so, where can I buy the parts to interface it with the C-64? Also, is there any special software I can use?

Fred Vogel, Jr.
New City, NY

In answer to your questions, check out the Omnitronix Deluxe RS-232 Interface. It will let you connect an RS-232 modem to a VIC-20, C-64, C-128, SX-64 or Plus/4. You won't need a cable because this interface has one built in. It costs $49.95, and



PACKAGE 1

C128 COMPUTER
C1571 DISK DRIVE
C1902A MONITOR
MPS1200 PRINTER
WORD PROCESSOR
DATABASE SOFTWARE

$999.90

w/1526 LETTER QUALITY PRINTER **$990.90**

PRINTERS

Okimate 10	$124.77
Okimate 20	$134.77
Plug-N-Print C64	$ 59.77
Plug-N-Print Amiga	$ 69.77
Panasonic 1091	$224.77
Panasonic 1080	$199.77
Star NX 10	$239.77
Star SG10C	$228.77
Okimate 120	$224.77
Epson LX 80	$239.90
Epson LX 85	$369.90
Epson LX 286	$479.90

ACCESS

Mach 5	$ 23.77
Mach 128	$ 29.77
10th Frame	$ 23.77
Leader Board	$ 23.77
Tournament Disks	$ 19.77
Executive Tournament Disk	$ 14.77

SUBLOGIC

Jet	$ 25.70
Flight Simulator II	$ 31.70
Scenery Disks 1-6	ea.$ 13.70
Scenery Disk 7-12	ea.$ 13.70
Scenery Disks 6 Pack	$ 69.70
Spy vs. Spy 1 & 2	$ 9.77
Dessert Fox	$ 9.77
Deceptor	$ 9.77

All 3 for $28.00

PACKAGE 2

C128 COMPUTER
C1571 DRIVE
C1902A MONITOR
2 FREE PROGRAMS
(our choice)
JOYSTICK

$799.90

COMMODORE HARDWARE

C1600 Modem	$ 29.90
C1660 Modem	$ 49.90
C1670 Modem	$149.90
C1700 Expander	$129.90
C1750 Expander	$169.90
MPS1200 Printer	$239.90
VIC 1525 Graphics Printer	$ 99.90
1526 Letter Quality Printer	$159.90
1802 Monitor	*$169.90*
1902A Monitor	*$289.90*

ACCOLADE

Dam Busters	$ 17.90
Fight Night	$ 17.90
Hardball	$ 17.90
Law of the West	$ 17.90

EPYX

Multiplan	$ 39.90
Movie Monster	$ 23.77
Championship Wrestling	$ 23.77
Super Cycle	$ 19.77
Summer Games	$ 22.77
World Games	$ 23.77
Fast Load	$ 23.77
World Karate Champ	$ 17.90

BERKLEY SOFTWORKS

GEOS	$ 37.77
Desk Pak	$ 20.77
Font Pack	$ 19.77

BATTERIES INCLUDED

Consultant	$ 35.77
Paperclip	$ 35.97
Paperclip w/Spell	$ 47.77
"MUPPET PAD" By Koala Technologies	$ 19.77

PACKAGE 3

64C COMPUTER
1541C DISK DRIVE
VIC1525 GRAPHIC PRINTER
2 FREE GAMES
JOYSTICK

$499.90

w/1802 Monitor **$679.90**

TIMEWORKS

Data Manager 128	$ 37.77
Swiftcalc 128 w/Sideways	$ 37.77
Wordwriter128w/SpellCheck	$ 37.77
Partner 128	$ 37.77
All Four	$149.90
Data Manager	$ 27.77
Word Writer	$ 27.77
Swift Calc	$ 27.77
All Three	$139.77

MICROPROSE

Acrojet	$ 20.77
F15 Strike Eagle	$ 19.47
Conflict in Vietnam	$ 19.47
Gunship	$ 22.77
Silent Service	$ 24.77

SPRINGBOARD

Newsroom	$ 29.90
Certificate Maker	$ 29.90
Clip Art I	$ 18.90
Clip Art II	$ 21.90
Clip Art III	$ 21.90
Graphics Expander	$ 24.90

ABACUS

Assembler Monitor	$ 24.99
Basic 128	$ 39.99
Basic 64	$ 24.99
Cadpak 128	$ 39.99
Cadpak 64	$ 27.99
Chartpak 128	$ 27.99
Chartpak 64	$ 24.99
Cobol	$ 27.00
Forth	$ 26.90
Powerplan	$ 26.90
Quick Copy 2.0	$ 14.90
Super C Compiler	$ 39.90
Super Pascal	$ 39.90
T.A.S.	$ 39.90
Video Basic	$ 27.90
XPER	$ 39.90
Fleet System II	$ 40.77
Fleet System III	$ 47.77

PACKAGE 4

64 C COMPUTER
154K COMPUTER
5 GAMES
2 JOYSTICKS

$429.90

JOYSTICKS & ACCESSORIES

WICO The Boss	$ 10.77
WICO Bat	$ 14.77
WKO 3 Way	$ 18.77
Kraft	$ 6.77
Recoton Big Shot	$ 11.77
5¼" Drive Cleaner	$ 6.77
3½" Drive Cleaner	$ 14.77
CRT Cleaner	$ 14.77
C64 Cover	$ 6.77
C128 Cover	$ 7.77
Drive Cover	$ 7.77
Printe Head Cleaner	$ 7.77

DIGITAL SOLUTIONS

Pocket Writer-64	$ 23.77
Pocket Writer 128	$ 28.77
Pocket Planner 64	$ 23.77
Pocket Planner 128	$ 28.77
Pocket Filer 64	$ 23.77
Pocket Filer 12	$ 28.77

BRODERBUND

Karateka	$ 17.00
Printshop	$ 25.90
LIB 1/2/3	$ 14.90
Companion	$ 24.90
Bank St. Writer	$ 32.90

SEIKOSHA V1000C

- 100% Commodore Compatible
- 120 CPS Draft
- 40CDS NLQ

$179.90

SUPER SPECIAL
PRINTMASTER
ART GALLERY I
ART GALLERY II

PRECISION

Superbase 64	$ 47.77
Superscript 64	$ 47.77
Superbase 128	$ 52.77
Superscript 128	$ 52.77

MONTHLY SPECIALS

Robotron	$ 6.77
MS. Pac Man	$ 6.77
Battlezone	$ 6.77
Centipede	$ 6.77
Dig Dug	$ 6.77
Jungle Hunt	$ 6.77
Frogger	$ 6.77
Q Bert	$ 6.77
Popeye	$ 6.77
Calc Now	$ 6.77

ORDERS ONLY
1-800-233-6345

CUSTOMER SERVICE OR IN FLORIDA (305) 538-1364
FREE FREIGHT ON ALL ORDERS OVER $100.00

Orders under $100.00 add $4.00 shipping and handling. C.O.D. orders add $4.00 prices reflect a 3% cash discount. Add 3% for VISA/MC AMEX
Personal checks allow 2 wks for processing Prices Subject to Change Without Notice
ORDERS RECEIVED BEFORE 12:00 PM WILL BE SHIPPED SAME DAY. Florida residents add 5% sales tax

if you can't find it at a local dealer, you can order it directly from Omnitronix at 760 Harrison St., Seattle, WA 98109; 206-624-4985.

Commodore used to make an RS-232 interface called the VIC-1011a, and Batteries Included made a similar product. It's my understanding that neither is currently in production, but you might be able to find one if you keep your eyes open. They both require an additional male-to-male RS-232 cable.

Is there a terminal program for the C-64 that will support the Kermit transfer protocol? If so, where might I obtain it?

Mike Hunsicker
Greenfield, MA

If you're a member of Quantum-Link or GEnie, you should be able to find a Kermit program on-line. Public Domain Solutions (PO Box 832, Tallevast, FL 34270) also has one for $5, plus $1 for postage and handling.

I live out in the boonies of southern Georgia, and the only way to connect to a national on-line network is at normal long-distance phone rates. This has prevented me from getting on-line. Is there any system or network that has a toll-free call-in number, even if it has a high monthly minimum charge?

There is a Tymnet access number in Savannah (about 30 miles away), but that's still a long-distance call. There are several C-64 users in this area, and we're all in the same boat.

Woodrow W. Smith
Midway, GA

I don't know of a network with a toll-free number, but I'll keep looking for one. Meanwhile, you might try to find someone who lives between you and Savannah and is a local call away from both. If that person has call forwarding, ask him or her to forward your call to the Tymnet node in Savannah. Then see if the call appears on your next bill.

If you aren't charged for the call, a group of C-64 users in your area might consider getting an additional phone line installed in the intermediary's house and have all the calls to that line forwarded to the node number. Then all of you could call Tymnet via this line with no long-distance charge. I know this works in the area where I live, so it's worth a try.

Telecomputing Tip of the Month

If you use more than one BBS, be sure to use a different password on each. Then, if you ever suffer some sort of security leak, you'll have to change your password only on the affected system.

Also, don't use passwords that have an obvious connection to you. Many people use their spouse's or pet's name, the type of vehicle they drive or their favorite hobby. Make the intruder's job more difficult by using a word or group of characters that doesn't relate specifically to you or anything you've done.■

UTILITIES UNLIMITED
P.O. BOX 422
BRUSH PRAIRIE, WA 98606

Add $3.00 Shipping & Handling
Orders Shipped in 2 to 7 working days
(206) 254-6530
C.O.D.
VISA
MasterCard

$19.95 PARAMETERS R' US (100 pack)

The Newest and Most Effective Parameter Copier to date, is now ready for shipping. Parameters R' Us, will ELIMINATE all the protection of the most popular and most protected software available for the C-64/128. Parameters R' Us is completely menu driven and easy to use by anyone.

FEATURES INCLUDE: works in seconds, eliminates protection, menu driven, works on 1541 and the 1571, copies made are fully compatible with 3rd party drives, and updated every 2 mounts.

$4.99 PARAMETERS R' US (10 pack)

The 10 pack is for those that can't wait 2 mounts for the next release of the next (100 pack). This package will be released every 1 to 2 weeks and will include those titles that were just released.

$4.99 PARAMETERS R' US (GEOS pack)

This Parameter disk was designed just for GEOS and all its Utility packages. Not only will it eliminate the protection, but will also allow use of GEOS UTILITIES (desk pack, writers workshop, geo dex) with any GEOS that has been FIXED with this set of parameters.

$19.95 LOCK PICK-64/128

Was designed for the collector in mind. Lock pick will allow you to put up to 600 parameters on each side of a disk. Lock Pick-64/128 also breaks the protection out of keys and parameter for easy back up.

$29.95 LOCK PIK C64/128 (The Book)

Lock Pk 64/128 was put together by Utilities Unltd. as a tool for those who have a desire to find out how the heavy Hackers do it. This package includes:

1. Lock Pik book that gives you step by step instructions on BREAKING or backing up over 100 popular programs using Hesmon and Superedit. The instructions are so clear and precise that anyone can use it.

2. Lock Pik disk has Mesmon 64, Superedit, Disk Compare, Kernal Save, I/O Save, and Disk File Log with detailed instructions on how to use these programs all on 1 disk.

3. We also have a limited supply (7500) Hesmon cartridges that will be given out free with the first 7500 orders.

I think you will agree this is the best buy to come along in a long time, you get it all for $29.95.

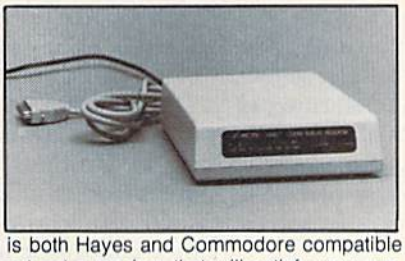
Circle 187 on Reader Service card.

The Great Communicator

Direct-connect Hayes/Commodore® 1670 compatible 1200 Baud modem for ONLY $119.95.

Now that you're able to do all those stand alone applications with your Commodore, like word processing, spread sheet analysis, and many others, you are probably thinking "It would sure be nice if I could expand the amount of data I have access to." You are quite right, everything from Electronic Mail (E-mail) to stock quotes and huge databases of every imaginable type is now on line to the small computer owner. You can even send and receive telexes anywhere in the world. All you need is a telephone and a modem which allows your computer to communicate with others through these many services.

The next question is: "Which modem is best for me?" Let me first say that almost all modems (and services) are set up to communicate in one of two speeds; 300 and 1200 Baud. If you look around you will find that there is a flood of 300 baud modems on the market and sometimes at very low prices. The reason is simple, they are being dumped because most computer users prefer 1200 Baud. (1200 Baud is about 4 times as fast which means you spend less time and money getting the data you want and more time enjoying it.) Virtually everyone who has a 300 would rather have a 1200. You will also notice a few very cheap 1200s on the market at "too good to be true prices". They are. The reason is that they are either not truly Hayes and/or Commodore compatible therefore not usable in all situations and with all services.



The Aprotek-1200C is both Hayes and Commodore compatible and 1200 baud. Why not get a modem that will satisfy your present AND future needs by going directly to an inexpensive Aprotek-1200C especially when we have it on sale?

What do you get for $119.95? Everything! You don't need to worry about cables, compatibility or anything else! We don't just sell hardware, we sell solutions. The Aprotek-1200C plugs directly into your Commodore Vic-20, C-64, C-64C or C-128 user port. It is unique in that it has two separate (switchable) emulation modes (Hayes and Commodore 1670) to make it compatible with all available software. The Aprotek-1200C is a full feature, 300 and 1200 Baud modem with Auto Answer, Auto Dial. Touch-Tone or rotary dialing, has the full complement of 8 status LEDs on the front panel and has a built in speaker with volume control. Just plug it into your computer and standard phone jack with the supplied cables. Also included is a free trial offer subscription to Quantum-Link, a very useful Commodore user database with local access numbers and about every feature imaginable.

Do you have more than one computer or do you plan to get another computer? You can have your cake and eat it too. Simply order our Universal RS-232 interface #5232 along with the standard Aprotek-1200 which you can use with any computer that has a RS-232 serial port as well as your Commodore.

NO RISK POLICY
Try the Aprotek-1200 for two weeks and if you are not satisfied, send it back for a prompt refund.

The bottom line:

Aprotek-1200C (for Commodore)
order #1200C.....$119.95

Aprotek-1200 (for RS-232 with DB-25)
order #1200.....$119.95

Modem shipping – Cont. US $5.00, UPS Blue $10.00

UNIVERSAL RS-232 INTERFACE

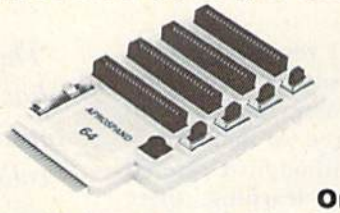
with Commodore User Port expansion.ONLY $39.95 + shipping

Now you can connect and communicate with any of the popular RS-232 peripherals using your Commodore User Port. You can even connect more than one and leave it permanently attached. This superb expander opens a whole new world to your Commodore computer's capabilities. You can now connect to printers, modems and any other RS-232 devices. If you already have a device that connects to the User Port, don't worry because the port is duplicated on the outside edge of the interface. Simply plug it in and turn on the device you want to communicate with. Comes complete with sample driver program listings. Compatible with all Commodore home computers with a user port. 1-year warranty. **Order #5232.**

Aprospand-64™

Gives your Commodore 64 or 128 full expandability! This superbly designed expansion module plugs into the expansion port & gives you 4 switchable (singly or in any combination) expansion connectors —plus fuse protection—plus a reset button! Before you buy an expander, be sure that it has a fuse to protect your computer and that you can activate your cartridges in **any** combination allowed by the cartridges.

The Original



Fully C-128 Compatible

Order # 5064

NOW ONLY $29.95 + shipping

NEW! ***"EXTENDER-64"*** allows you to place your Aprospand-64 (or any other cartridge expander) in a more convenient location. This device is a 10" section of ribbon cable with male and female connectors that allows you to place your cartridges to the side of, rather than in back of, your computer. This puts your cartridges and switches within easy reach.

ONLY $19.95 + shipping. **Order #5065**

Commodore Interfaces and Cables

Cardprint G-WIZ Printer Interface #1108	$46.95
Commodore Serial Extension Cables	$Call
Amiga Printer Cable (6 ft) #3040-6MF	$17.95
Amiga Printer Cable (10 ft) #3040-10MF	$21.95
Commodore 6 Pin Serial Cable (5 ft) #3006-5MM	$ 6.95
Commodore 6 Pin Serial Cable (8 ft) #3006-8MM	$ 8.95

Shipping per above items: $3. Cont. US $6. CAN,PR,HI,AK,APO,UPS Blue

PRINTERS

	Price & Shipping
Aprotek Daisy 1120, 20 CPS, Order #1120	$279.95 + $11.00
Auto Cut-Sheet Feeder, Order #1110	$185.00 + $7.00
Tractor Feed, Order #1112	$ 75.00 + $5.00

SEIKOSHA

SP-1000VC (C-64) Order#2200	$163.95 + $10.00
SP-1000 Apple IIc, Mac Order #2300	$184.95 + $10.00
SP-1000 IBM Order #2100	$184.95 + $10.00
SP-1000 Serial Order #2500	$184.95 + $10.00
SP-1200AI Order #2600	$199.95 + $10.00
MP-1300AI 300 CPS, #2700	$449.95 + $12.00
MP-1300 Color Kit Order #2705	$119.95 + $ 5.00
BP-5420 420 CPS Order #2800	$949.95 + $27.00

ORDER INFORMATION California residents add 6% tax. All prices are cash prices—VISA and MC add 3% to total. We ship the next business day on money orders, cashier's checks, and charge cards. A 14-day clearing period is required for checks. Prices subject to change— CALL. Dealer inquiries invited.

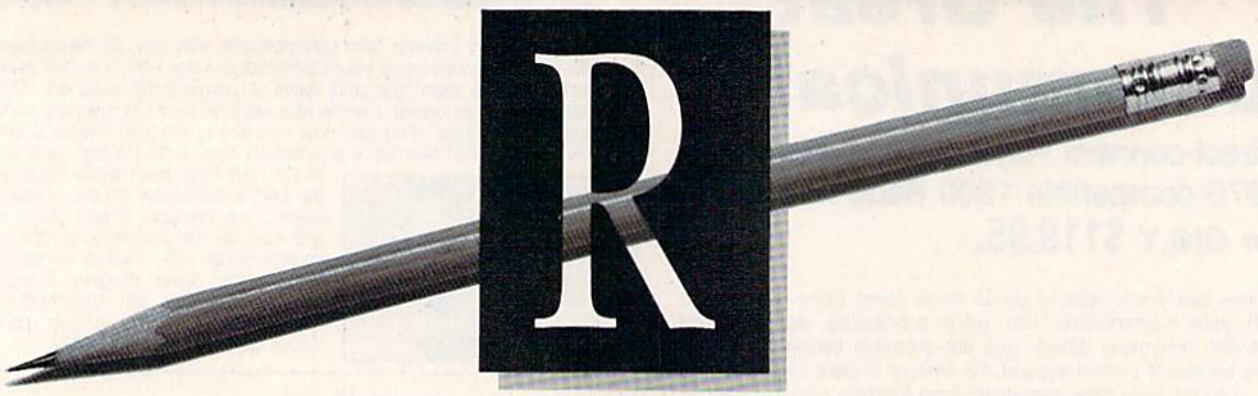
For information and in Calif. call **805/987-2454**
TO ORDER CALL TOLL FREE
1 (800) 962-5800 (7-7 PST)

Or send order to:

Dept RN

APROTEK

1071-A Avenida Acaso
Camarillo, CA 93010



By MARGARET MORABITO

The Electronic University has come of age, providing on-line opportunities to earn college credits and degrees.

Two years ago I reported on the Electronic University, a unique on-line network that offers the chance to earn a college degree. At that time, it was young, and although it offered great potential for learning, there were problems to be overcome. The software was slow and was in need of strong technical support, and the network didn't have the support of major universities across the nation.

Now I'm pleased to report on improvements in TeleLearning's Electronic University. The network has matured in several ways and today is a key force in providing higher education to the adult working person.

In the Beginning

TeleLearning, Inc., from San Francisco, California, opened the Electronic University Network (EUN) three years ago. Originally, the network catered only to Commodore 64 owners, a credit to the millions of home users who bought this computer. As the concept of on-line learning gathered steam, however, the demand from other computerists grew and resulted in EUN's opening its doors to Apple and IBM users, too.

While the original concept was to enroll the millions of home computerists in personal enrichment courses, many students of EUN today are corporate employees who want to earn a college degree. EUN has about 5000 students who work for corporations and have their education financed through tuition reimbursement options.

Students are drawn to the network because it lets them go to college without disrupting their home and work life through travel to attend scheduled classes. Also, on-line learning is self-paced and individualized, with students corresponding directly with their instructors through electronic mail.

A Communications Channel

The goal of the Electronic University Network is to provide a channel through which students and professors can communicate. It's a communications network, not a university, but its staff is devoted to the advancement of education and is working to make student enrollment and participation both easy and motivating.

The EUN staff provides student counseling on which courses to take, advice on how to procure books and other study materials, preparation of the paperwork needed by each college through which a student takes a course, and technical support if a student runs into computer problems. You can even order a computer and your books directly from EUN.

The professors come from universities and colleges across the nation. They create the courses, select the texts, and teach over the modem and phone lines via the network.

College Credit

EUN provides courses for students to take for college credit, as well as seminars and some other noncredit courses. Since most of the network's students are working adults who want to move up in their companies and need a college degree to do so, credit courses are in demand. Currently, you can earn Associate in Arts, Associate in Science in Management, Bachelor of Arts, Bachelor of Science in Business Administration and Master of Business Administration degrees through EUN.

Of course, you have to be enrolled in a college or university to receive credit for the courses you take. If you aren't already enrolled in a local college, you can enroll in one of three colleges that work directly with and offer degrees through EUN. These are JFK University in California, Thomas Edison State College in New Jersey and the State University of New York/Regents College.

These three colleges handle off-campus students specifically, allowing them to take courses and earn their degree credit from a variety of sources, including EUN. You can also get credit from these institutions for prior course work at other colleges, work experience, CLEP (College Level Examination Program) tests and correspondence courses.

There are three ways to use the credits earned through EUN. You can take courses without actually working toward a degree; you can study in an associate's, bachelor's, master's or certificate program; or you can accumulate credits from on-line courses and transfer them to a local college where you're enrolled.

Only NRI teaches you to service all computers as you build your own fully IBM-compatible microcomputer

NEW! Train with the newest Sanyo 880 Series Computer—it's fully IBM-compatible and runs almost twice as fast!

With computers firmly established in offices—and more and more new applications being developed for every facet of business—the demand for trained computer service technicians surges forward. The Department of Labor estimates that computer service jobs will actually *double* in the next ten years—a faster growth rate than for any other occupation.

Total systems training

No computer stands alone... it's part of a total system. And if you want to learn to service and repair computers, you have to understand computer *systems.* Only NRI includes a powerful computer system as part of your training, centered around the new, fully IBM-compatible Sanyo 880 Series computer.

As part of your training, you'll build this highly rated, 16-bit, IBM-compatible computer system. You'll assemble Sanyo's "intelligent" keyboard, install the power supply and disk drive and interface the high-resolution monitor. The 880 Computer has two operating speeds: standard IBM speed of 4.77 MHz and a remarkable turbo speed of 8 MHz. It's confidence-building, real-world experience that includes training in programming, circuit design and peripheral maintenance.

No experience necessary—NRI builds it in

Even if you've never had any previous training in electronics, you can succeed with NRI training. You'll start with the basics, then rapidly build on them to master such concepts as digital logic, microprocessor design, and computer memory. You'll build and test advanced electronic circuits using the exclusive NRI Discovery Lab®, professional digital multimeter, and logic probe. Like your computer, they're all yours to keep as part of your training. You even get some of the most popular software, including WordStar, CalcStar, GW Basic and MS DOS.

Your NRI total systems training includes all of this: NRI Discovery Lab® to design and modify circuits • Four-function digital multimeter with walk-you-through instruction on audio tape • Digital logic probe for visual examination of computer circuits • Sanyo 880 Series Computer with "intelligent" keyboard and 360K double-density, double-sided disk drive • High resolution monochrome monitor • 8K ROM, 256K RAM • Bundled software including GW BASIC, MS DOS, WordStar, CalcStar • Reference manuals, schematics, and bite-sized lessons.

NRI is the only technical school that trains you on a total computer system. You'll install and check keyboard, power supply, disk drive, and monitor, following step-by-step directions.

Send for 100-page free catalog

Send the coupon today for NRI's 100-page, full-color catalog, with all the facts about at-home computer training. Read detailed descriptions of each lesson, each experiment you perform. See each piece of hands-on equipment you'll work with and keep. And check out NRI training in other high-tech fields such as Robotics, Data Communications, TV/Audio/ Video Servicing, and more.

SEND COUPON TODAY FOR FREE NRI CATALOG!

NRI SCHOOLS
McGraw-Hill Continuing Education Center
3939 Wisconsin Avenue, NW, Washington, DC 20016
We'll give you tomorrow.

For Career courses approved under GI Bill ☐ check for details.

☑ CHECK ONE FREE CATALOG ONLY

- ☐ **Computer Electronics**
- ☐ TV/Audio/Video Servicing
- ☐ Satellite Electronics
- ☐ Robotics & Industrial Control
- ☐ Data Communications
- ☐ Industrial Electronics
- ☐ Communication Electronics
- ☐ Electronic Design Technology
- ☐ Telephone Servicing
- ☐ Digital Electronics Servicing
- ☐ Basic Electronics
- ☐ Electricians
- ☐ Appliance Servicing
- ☐ Small Engine Repair
- ☐ Air Conditioning, Heating, & Refrigeration
- ☐ Locksmithing & Electronic Security
- ☐ Building Construction
- ☐ Automotive Servicing
- ☐ Photography
- ☐ Bookkeeping & Accounting

Name (Please print) Age

Street

City/State/Zip

Accredited by the National Home Study Council

445-037

The Resource Center

The 1986–87 EUN catalog lists 22 colleges and universities that offer courses through the network. Most of the courses are available through the three degree-granting universities I mentioned above, and others are offered on a limited basis from major campus-based universities. These schools award credit for their courses, and you can then transfer that credit toward your own degree program.

Some of the participating schools are Boston University, California State Polytechnical University, Eastern Michigan University, Ohio University, Penn State University, the University of Illinois, the University of Iowa and Washington State University.

The Instruction

One of the most intriguing aspects of EUN is the way it implements on-line learning. For each course, you receive a textbook, a workbook and a TeleLearning course disk that includes lessons and assignments. EUN encourages its professors to pursue a multimedia approach, so some courses use other kinds of learning aids as well. For example, a student might view a videotape as part of a lesson. On-line time is kept to a minimum and is used only for uploading and downloading assignments and for electronic mail.

Typically, after registration in a course, a student logs onto EUN and receives a welcome message and the first assignment from the professor. Then he or she logs off and studies off-line. This studying includes reading from the text, doing exercises in the workbook and preparing the homework assignment for uploading back to the instructor.

Except for going on-line, these are all traditional methods of instruction. EUN doesn't buck the educational system; it enhances it with the goal of offering the student a variety of proven methods for learning.

New Software

Since December of 1986, TeleLearning has offered a new instructional delivery system, developed by Dr. James Milojkovic of Stanford University.

Called Protege, this software is a significant improvement over that originally provided by TeleLearning. Protege is faster, due in part to data compression of lessons; it's crash-proof and easier to use; it provides more opportunity for communication with the instructor; it's menu-driven, with windows; and it makes help files always available.

The software relies on about 35 different templates that instructors can use to create course lessons. The student works within these templates as he or she proceeds through the course. In preparing homework, the student uses a variety of tools built into the templates that emulate word processor, database and communications functions.

The Cost

You pay $195 ($125 if you work for a participating corporation) for a lifetime EUN membership, which can be used by any member of your family. This enrollment fee lets you communicate on the network, register for courses and access the counseling service and library.

Each course also carries its own tuition fee of $60–$80 per undergraduate credit and $100–$130 per graduate credit. In most cases, the course fee covers the course disks, the professor's time and telecommunications costs. Textbooks, study guides and other materials are additional. These costs are about the same as for a course at a private college.

If you're enrolling as a new student in a participating college or university, you must also pay that school's fees, which vary from school to school. EUN counselors let you know what all your fees are at the time of registration.

Course counseling is included in your enrollment fee at EUN, and when you access the library, you pay only for the time you accrue in the database you use. The library consists of 60 databases and other services.

The Electronic University Network isn't for all students, but it does fill the growing need of our adult population for higher education without physically going back to school. For more information about this network, write to the Electronic University Network, 505 Beach St., San Francisco, CA 94133, or telephone 1-800-22LEARN.■

If you're using Commodore computers for educational purposes (at home or in school) and would like to share your experiences through The Resource Center, write me a letter detailing the equipment you're using, subject areas being taught, grade level or age of your students, software that you're using and any other information you feel like including.

Also, if you'd like to donate public domain educational programs to The Resource Center for sharing with other educators or parents, please send along a disk with a brief description of the program. Send correspondence and disks to:

Margaret Morabito
The Resource Center
c/o RUN *magazine*
80 Elm St.
Peterborough, NH 03458

You can also leave mail in my on-line mail boxes: CompuServe (70616,714) or QuantumLink (MARGM).

RUN is a publication of CW Communications/Inc. (CWCI), an International Data Group (IDG) company. CWCI is the world's largest publisher of computer-related periodicals, with more than 70 computer publications in 28 countries. 12 million people read one or more of CWCI's publications each month. Members of the CWCI group are connected by and contribute to the *CW International News Service*, offering the latest domestic and international computer news. Members of the group include: ARGENTINA'S *Computerworld Argentina, PC Mundo*; ASIA'S *Asian Computerworld, Communications World*; AUSTRALIA'S *Computerworld Australia, Communications World, Australian PC World, Australian Macworld*; AUSTRIA'S *Computerwelt Oesterreich*; BRAZIL'S *DataNews, PC Mundo*; CHILE'S *Informatica, Computacion Personal*; DENMARK'S *Computerworld Danmark, PC World Danmark, RUN*; FINLAND'S *Tietoviikko, Mikro*; FRANCE'S *Le Monde Informatique, Distributique, Golden, InfoPC, Theoreme, Le Monde des Telecoms*; GREECE'S *Micro & Computer Age*; HUNGARY'S *SZT Computerworld, Mikrovilag*; INDIA'S *Dataquest*; ISRAEL'S *People & Computers Monthly, People & Computers Weekly*; ITALY'S *Computerworld Italia, PC World Magazine*; JAPAN'S *Computerworld Japan*; MEXICO'S *Computerworld Mexico*; THE NETHERLANDS' *Computerworld Netherlands, PC World Netherlands*; NEW ZEALAND'S *Computerworld New Zealand*; NORWAY'S *PC Mikrodata, Computerworld Norge*; PEOPLE'S REPUBLIC OF CHINA'S *China Computerworld*; SAUDI ARABIA'S *Arabian Computer News*; SOUTH KOREA'S *The Electronic Times*; SPAIN'S *Computerworld Espana, Commodore World, PC World Espana*; SWEDEN'S *Computer Sweden, Mikrodatorn, Sveriska PC World*; SWITZERLAND'S *Computerworld Schweiz*; UNITED KINGDOM'S *Computer News, DEC Today, ICL Today, PC Business World*; UNITED STATES' *AmigaWorld, Boston Computer News, Computerworld, Digital News, 80 Micro, FOCUS Publications, inCider, InfoWorld, MacWorld, Micro Marketworld, Network World, PC World, Publish!, RUN*; VENEZUELA'S *Computerworld Venezuela, PC World Venezuela*; WEST GERMANY'S *Computerwoche, PC Welt, Computer Business, Run, InfoWelt.*

Commodore Product Potpourri

Hardware, Software & Firmware for your C-64, C-64C, C-128, AMIGA

256-K AMIGA™ MEMORY

It all began 8 years ago when Commodore produced a wondrous **PET** Computer with 8 Kbytes of memory. **Skyles Electric Works** then offered to double the **PET** memory with an 8 Kbyte memory addition.

History repeats itself 7 years later. At 1/3 the price of the original PET memory expansion, Skyles Electric Works now offers 32 times the memory. That's right!! **256 Kbytes of AMIGA memory** expansion for only **$79.95***.

Buy your 256 Kbyte AMIGA memory expansion from **Skyles Electric Works** at the **lowest price** from the **most reliable** and **most proven** Commodore expansion memory builder in the world.

256-K Memory for AMIGA $79.95*

A panoramic passel of pelucid paragraphs presented by a premier purveyor

MEGABYTES for AMIGA

Available now from Skyles Electric Works. We had so much fun developing the **256-K Memory for Amiga** that we decided to offer **1 Mbyte, and 2 Mbyte, Memories for Amiga.** Consider, 1,048,576 or 2,097,152 bytes of memory designed to plug directly into the right side of the **Amiga**. Each memory board offers full 86 pin buffered pass-thru with Addmem or Auto-config on turn on. We searched America for the best **Amiga Memory** and found it.

1 Megabyte Amiga Memory $499.95*
2 Megabyte Amiga Memory $949.95*

MIDI for AMIGA

A Standard MIDI IN, 2 MIDI OUT, and MIDI THRU Interface for the **Amiga** Computer. Plug it into the RS-232 Port on the rear of your **Amiga** and you are ready to use Musical Instrument Digital Interface (MIDI) instruments and devices with your **Amiga**. Designed to be used with standard MIDI cables and all the presently available **Amiga** MIDI software. The **MIDI for Amiga Interface** gets the job done at a bargain price.

MIDI for Amiga Interface $49.95*

CLOCK for AMIGA

We Were Shocked When We Discovered that the otherwise friendly **Amiga** "would not even give us the time of day". We immediately set about fixing the problem with **Clock for Amiga**. No longer is it necessary to set the clock via Preferences. With **Clock for Amiga** you can have the time of day set automatically each time you turn on your **Amiga**. **Clock for Amiga** is a small cartridge that plugs onto the 86 pin connector on the right side of your **Amiga**. **Clock for Amiga** runs for two years even if your **Amiga** is turned off. Get **Clock for Amiga** today and let your **Amiga** be an amiga.

Clock for Amiga $79.95*

2 for 1 MONITOR CABLE/C128

The **2 for 1 Monitor Cable** allows all composite video monitors to be used with the **Commodore 128** in all modes of operation. Don't throw out your present green or amber monitor, buy a **2 for 1 Monitor Cable.**

2 for 1 Monitor Cable for C-128 .. $24.95*

1541 FLASH!

The new Skyles Electric Works **1541 FLASH!** loads programs and files to your **Commodore 64/64C or Commodore 128** (64 mode) three times faster than an unenhanced Commodore 1541 disk drive. **1541 FLASH!** saves programs 20 to 50 percent faster. **1541 FLASH!** formats a diskette in 25 seconds, a real flash.

The **1541 FLASH!** is a permanent hardware installation in your **Commodore 64/64C** and **Commodore 128** (64 mode) and **1541 disk drive.** No programs to load, no cartridge hassles.

We have special versions of the **1541 FLASH!** for the **SX-64** and two **1541s**.

In addition to its blinding speed of program and file loading, the **1541 FLASH! adds over 50 extra commands for the Commodore 64/64C/128** user. These include a built-in DOS/Wedge, Easy Editor, and FLASHMON! machine language monitor.

1541 FLASH! C-64/C-64C & 1541 ... $69.95*
1541 FLASH! C-64/C-64C & two 1541s $109.95*
C-128 FLASH! C-128 & 1541 ..... $79.95*
C-128 FLASH! C-128 & two 1541s $119.95*
SX-64 FLASH! SX-64 & 1541 ..... $69.95*
SX-64 FLASH! SX-64 & two 1541s $109.95*

A powerful panoply of pertinent, potent, peripheral products

QUICKSILVER 128

QUICKSILVER 128 our premier IEEE-488 Interface for the **Commodore 128** is now in stock and even better than we had planned. **Quicksilver 128** offers an IEEE Interface for the **Commodore 128** in the C-128 mode (40 or 80 columns) and in the C-64 mode as well. **QUICKSILVER 128** will inter-connect your **Commodore 128** to Commodore SFD 1001, 2031, 2040, 3040, 4040, 8050, 8250, 9060, and 9090 Disk Drives. **QUICKSILVER 128** will connect your **Commodore 128** to Commodore 2022, 2023, 4022, 4023 and 8023 Printers.

QUICKSILVER 128 C-128 ..... $119.95*

A priceless programmers pallett of practical products and programs

IEEE Flash! 64

IEEE Flash! 64 our premier IEEE-488 Interface for the **Commodore 64** is now in stock and even more transparent (program compatible) than QUICKSILVER 64. **IEEE Flash! 64** will inter-connect your **Commodore 64** to Commodore SFD 1001, 2031, 2040, 3040, 4040, 8050, 8250, 9060, and 9090 Disk Drives. **IEEE Flash! 64** will connect your **Commodore 64** to Commodore 2022, 2023, 4022, 4023, and 8023 Printers.

IEEE Flash! 64 C-64/C-64C $99.95*

DRUM MACHINE

Rhythm King is a drum machine for the C-64 and C-128. **Rhythm King** is a disk and an audio output cartridge that plugs into your **C-64 or C-128.** Rhythm King has 8 different percussion sounds built-in and **Rhythm King** will play up to 3 drums at a time. You may write "patterns of up to 24 bars, with up to 32 notes per bar, with up to 64 steps per note. Up to 64 different patterns may be linked together into a "song", with up to 255 repeats per pattern. Songs may be linked together to form "Megasongs" of up to 255 pattern steps.

RHYTHM KING 128 C-128 ..... $89.95*
RHYTHM KING 64 C-64 ..... $89.95*

Prevent and preclude premature pratfalls, by perplexed programming postulants

BASIC PROGRAM COMPILER

BLITZ! is the fastest, easiest to use, most popular, BASIC program compiler available for the **Commodore 128, C-64, and C-64C.** Your **BLITZ!** compiled programs will run from 5 to 20 times faster after you **BLITZ!** them. **BLITZ!** translates and reduces your BASIC programs in to a much, much faster code.

BLITZ! C-128, Disk $59.95*
BLITZ! C-64/C-64C, Disk $59.95*

BASIC PROGRAMMING AID

VICTREE is a BASIC programming aid cartridge for the VIC-20 and C-64/C-64C computer. **VICTREE** adds 42 extra commands for BASIC programming ease and full DOS control. **VICTREE** commands include CHAIN, EXECUTE, MERGE, SEND, USE, CONCAT, DOPEN, DCLOSE, RECORD, HEADER, COLLECT, BACKUP, COPY, APPEND, DSAVE, DLOAD, DIRECTORY, RENAME, SCRATCH, CATALOG, INITIALIZE, AUTO, DELETE, RENUMBER, MERGE, LCOPY, LMOVE, PRINT USING, FIND, CHANGE, PAGE, HELP, DUMP, and TRACE.

VICTREE 64 Cartridge, C-64/C-64C . $49.95*
VICTREE 20 Cartridge, VIC-20 .... $49.95*

ASSEMBLER CARTRIDGE

If your C-64 programming needs have extended beyond BASIC, Skyles Electric Works now offers **MIKRO**, a machine language assembler cartridge for the Commodore 64/64C. The **MIKRO** cartridge contains everything you need for machine language programming.

MIKRO Cartridge, C-64/C-64C $49.95*

The periodically puzzling, precarious, path to perspicacious program perfection and prowess

INCOME TAX PROGRAM

Taxware, the most comprehensive, easy to use, all year around record keeping and tax preparation system available for the **Commodore 64/64C**, is now **available for the Commodore 128.** Better yet, both the improved **C-64 and C-128** versions of this popular package are available in one comprehensive package. **TaxWare** includes forms 1040, 2441, and Schedules A, B, C, D, E, G, W and SE.

TAXWARE, C-64/C64C or C-128, 1541/1571 ..... $49.95

Skyles Electric Works

TO ORDER: Call 1-800-227-9998 or 1-415-965-1735 (CA) or write to:
For More Information: Send Stamped Self Addressed Envelope to:

231-E South Whisman Road, Mountain View, CA 94041

Circle 90 on Reader Service card.

PROTECTO
ENTERPRIZES

"The Computer Experts"

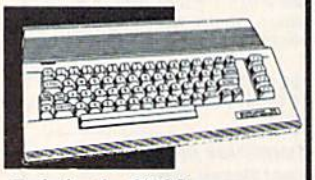
22292 N. Pepper Rd., Barrington IL 60010

• OUR WARRANTY •

All our products carry a minimum 90 day warranty from the date of purchase. If problems arise, simply send your product to us via U.P.S. prepaid. We will IMMEDIATELY send you a replacement at no charge via U.P.S. prepaid. This proves once again that...

We Love Our Customers!

COMMODORE 64c

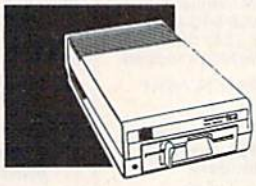


Includes the GEOS program.

SALE $ 159.95

List $299

BLUE CHIP DISK DRIVE



SALE $ 159.95

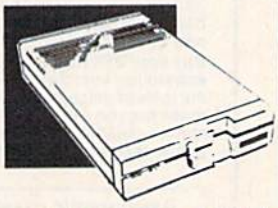
List $249

COMMODORE 128

SALE $ 289.00

List $399

1571 DISK DRIVE



SALE $ 259.95

List $349

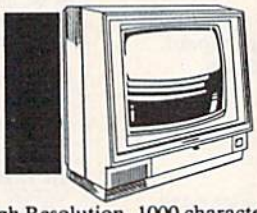
TV TUNER

Now switch your computer monitor into a television set with the flick of a switch. This Tuner has dual UHF/VHF selector switches, mute, automatic fine tuning and computer/TV selector switches. Hooks up between your computer and monitor! Inputs included for 300 ohm, 75 ohm, and UHF.

SALE $ 49.95

List $130

13" COLOR MONITOR



High Resolution, 1000 character display, with built in audio speaker with volume control.

SALE $ 179.95

List $329

BIG BLUE PRINTER

This is the affordable printer you've waited for! 8½" letter size, 80 column dot matrix, heat transfer printer features upper and lower case, underline, graphics, word processing, and much more.

SALE $ 39.95

List $199

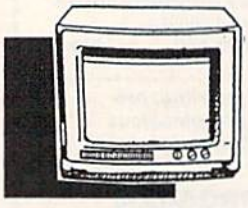
PRINTER & TYPEWRITER COMBINATION

Superb Silver Reed letter quality daisy wheel printer/typewriter, just a flick of the switch to interchange. Extra large carriage, typewriter keyboard, automatic margin control, compact, lightweight, drop in cassette ribbon! Includes Centronics Parallel Interface

SALE $ 179.95

List $299

12" 80 COLUMN MONITOR

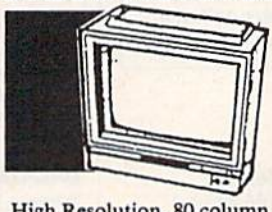


High Resolution amber or green screen monitor. 80 col. x 1000 lines at center. Non-glare screen. Works terrific with IBM, Apple and Laser business computers.

SALE $ 99.00

List $129

14" RGB & COMPOSITE COLOR MONITOR

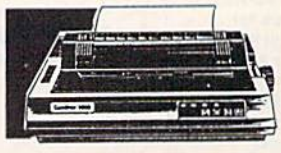


High Resolution, 80 column Monitor. Switch from RGB to Composite. (C128 - IBM -Apple) RGB cable $19.95. Add $14.50 shipping.

SALE $ 237.00

List $399

COMSTAR 1000 PRINTER



Print letters, documents, etc., at 100 cps. Works in Near Letter Quality mode. Features are dot addressable graphics, adjustable tractor and friction feed, margin settings, pica, elite, condensed, italics, super/subscript, underline, & more. CBM Interface Included.

SALE $ 179.95

List $349

160-180 CPS N.L.Q. 180 PRINTER

This printer has a Near Letter Quality button on the front panel. No more turning the printer on and off. The 8K buffer will free up your computer four times faster than conventional printers and the high speed will keep you computing more than printing. Super graphics along with Pica, Elite, Italics, and Condensed print. **Lifetime Warranty** on Print Head plus 6 month immediate replacement warranty.

SALE $ 199.00

List $499

MasterCard

TO ORDER CALL (312) 382-5244

8 am - 8 pm CST Weekdays / 9 am - 12 noon CST Saturdays

VISA

Circle 15 on Reader Service card.

BEST SERVICE IN THE USA • 1 DAY EXPRESS MAIL • OVER 1000 PROGRAMS • VOLUME DISCOUNTS • 15 DAY FREE TRIAL • CUSTOMER LIST OF OVER 3,000,000 - LARGEST IN THE USA

FOR FREE CATALOG CALL

(312) 382-5244

CALL BEFORE YOU ORDER: PRICES MAY BE LOWER & WE OFFER SPECIAL SYSTEM DEALS

MUSICAL KEYBOARD

This sturdy 40 key professional guage spring loaded keyboard gives the feel and response of a real keyboard instrument. (Conductor software required)

SALE $69.00

List $159.95

1200 BAUD MODEM

Save time and money with this 1200 Baud modem. It has many features you expect a modem to have plus 4 times the speed!

SALE $79.95

List $199

COMPUTER CLEANERS

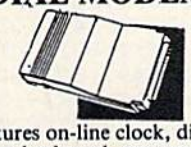
TV/Monitor Screen Restorer & Cleaning Kit, Disk Drive Cleaner, Anti-Static Keyboard Cleaner

*Choose any of these three computer cleaners for only $9.95 each!

SALE $9.95*

List $19.95

SUPER AUTO DIAL MODEM



Features on-line clock, dialing from keyboard, capture and display high resolution characters, and much more.

SALE $29.95

List $99

SINGLE SIDED DOUBLE DENSITY DISKS

100% Certified 5¼" floppy disks. **Lifetime Warranty.** 1 Box of 100 $29.00 List $1.99 each

.29¢ ea.

SPECIAL BONUS COUPON

We pack a special software discount coupon with every Computer, Disk Drive, Printer, or Monitor we sell! This coupon allows you to **SAVE OVER $250** off sale prices!

(EXAMPLES)

Name	List	Sale	Coupon
Transformers	$34.95	$22.95	*$21.95*
Trio C128	$69.95	$42.95	*$39.95*
Indoor Sports	$29.95	$19.95	*$18.95*
Championship Basketball	$34.95	$22.95	*$21.95*
Leader Board	$39.95	$23.95	*$21.95*
Tales of Me	$39.95	$16.95	*$14.95*
Monitor Stand	$79.95	$19.95	*$16.95*
Marble Madness	$24.95	$22.95	*$19.95*
Super Bowl Sunday	$35.00	$20.95	*$18.95*
SAT Sample Test	$39.95	$14.95	*$12.95*
Commando	$34.95	$22.95	*$21.95*
Auto Duel	$42.95	$32.95	*$29.95*
Flight Control Joystick	$19.95	$12.95	*$10.00*
Robotics Workshop	$149.00	$119.95	*$114.95*
C128 Troubleshooting & Repair Guide	$19.00	$14.95	*$12.95*

(See over 100 coupon items in our catalog.)

COMMODORE SOFTWARE

ACCESS

ACTION PACK (D)	$19.95
LEADER BOARD (D)	23.95
LEADER BOARD COURSES (D)	13.95
MACH 5 (C)	19.95
MACH 128 (C)	28.95
TENTH FRAME (D)	23.95

ACCOLADE

ACE OF ACES (D)	$18.95
DAM BUSTERS (D)	18.95
FIGHT NIGHT (D)	18.95
HARDBALL (D)	18.95
LAW OF THE WEST (D)	18.95
KILLED UNTIL DEAD (D)	18.95

BLUE CHIP

BARON (D)	$14.95
MILLIONAIRE (D)	14.95
TYCOON (D)	14.95

BCI

TOM WEISKOPF PRO GOLF (D)	$11.95
MR. TESTER (D)	5.95
PRINTERS LIB. 1 (D)	8.95
PRINTERS LIB. 2 (D)	8.95
DATABASE MGR./PLUS - C128 (D)	14.95
TASK FORCE (D)	4.95

BRODERBUND

PRINT SHOP (D)	$25.95
GRAPHICS LIB. 1,2 or 3 (D)	15.95
COMPANION (D)	22.95
TOY SHOP (D)	38.95
WHERE IS CARMEN SANDIEGO (D)	21.95
GRAPHICS LIB. HOLIDAY ED. (D)	15.95

ELECTRONIC ARTS

HEART OF AFRICA (D)	$9.95
ONE ON ONE (D)	9.95
PINBALL CONTRUCTION (D)	9.95
MUSIC CONSTRUCTION (D)	9.95
RACING DESTRUCTION (D)	9.95
MARBLE MADNESS (D)	22.95
CHESSMASTER (D)	25.95
BATTLEFRONT (D)	25.95
LORDS OF CONQUEST (D)	22.95

DATA SOFT

221 B BAKER STREET (D)	$17.95
MERCENARY (D)	17.95
NEVER ENDING STORY (D)	17.95
MIND PURSUIT (D)	17.95
VIDEO TITLE SHOP (D)	17.95
THEATRE EUROPE (D)	19.95

DESIGNWARE

BODY TRANSPARENT (D)	$24.95
EUROPEAN NATIONS & LOCATIONS (D)	22.95
STATES AND TRAITS (D)	22.95

HAYDEN

SARGON II (D)	$9.95
SAT VERBAL (D)	14.95
SAT MATH (D)	14.95
SAT PRATICE TEST (D)	14.95

COSMI

SUPER HUEY II (D)	$12.95
TALLADEGA (D)	10.95
BEYOND FORBIDDEN FOREST (D)	10.95

DATA EAST

COMMANDO (D)	$22.95
KARATE CHAMP (D)	22.95
KUNG FU MASTER (D)	22.95

EPYX

CHAMPIONSHIP WRESTLING (D)	$22.95
FAST LOAD (C)	22.95
MOVIE MONSTER (D)	22.95
WINTER GAMES (D)	22.95
WORLD GAMES (D)	22.95
WORLD KARATE (D)	16.95
WORLD'S GREATEST FOOTBALL (D)	22.95

FIREBIRD

COLOSSUS CHESS (D)	$20.95
ELITE 64 (D)	18.95
FRANKIE GOES TO HOLLYWOOD (D)	19.95
BATTLE OF BRITAIN/MIDWAY (D)	9.95
IWO JIMA/FAULKLANDS (D)	9.95
TALKING TEACHER (D)	22.95

HI-TECH EXPRESSIONS

CARD WARE (D)	$6.95
HEART WARE (D)	9.95
PARTY WARE(D)	9.95
WARE WITH ALL KIT (D)	9.95
HOLIDAY PRINT PAPER (D)	7.95

SUB—LOGIC

FLIGHT SIMULATOR II (D)	$31.95
JET (D)	25.95
FOOTBALL (D)	25.95
BASEBALL (D)	31.95

S.S.I.

ROADWAR 2000 (D)	$23.95
BATTLE OF ANTIETAM (D)	31.95
GETTYSBURG (D)	32.95
MECH BRIGADE (D)	32.95
NAM (D)	23.95
U.S.A.A.F. (D)	32.95
KAMPFGRUPPE (D)	32.95
WAR SHIP (D)	32.95

SOFTSYNC

ACCOUNTANT, INC. C128 (D)	$59.95
DESK MANAGER (D)	24.95
KID PRO QUO (D)	19.95
MODEL DIET (D)	19.95
TRIO C64 (D)	29.95

SPINNAKER

DELTA DRAWING (C)	$9.95
NUMBER TUMBLERS (C)	9.95
SEA SPELLER (C)	9.95
UP & ADD'EM (C)	9.95

Add $3.00 ($10.00 for hardware) for shipping, handling, and insurance. Illinois residents please add 6⅛% sales tax. Add $6.00 ($20.00 for hardware) for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. All orders must be in U.S. Dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice. Hardware shipping prices vary according to weight. Please call for amount. No APO-FPO for Monitors. C.O.D. on phone orders only.

VISA-MASTER CARD-C.O.D.

From p. 12.

```
8Ø T$="1":FORY=1 TO LEN(R$):T$=T$+"Ø":NEXT
9Ø PRINTL$" "R$"/"T$" IN LOWEST TERMS IS:"
1ØØ R=VAL(R$):T=VAL(T$)
11Ø FORZ=2 TO INT(T/2)
12Ø IFR/Z=INT(R/Z)AND T/Z=INT(T/Z) THEN R=R
    /Z:T=T/Z:Z=1E1Ø
13Ø NEXT:IFZ=1E1Ø GOTO11Ø
14Ø R$=STR$(R):T$=STR$(T):R$=RIGHT$(R$,LEN(
    R$)-1):T$=RIGHT$(T$,LEN(T$)-1)
15Ø PRINTL$" "R$"/"T$:RUN
```

Sister Anne Stremlau
Address unknown

$3B9 C-128 Unnew program—If you ever accidentally erase a program with the New command (a not uncommon occurrence—just wait till you do it yourself), you can restore it with the program below, which creates an Unnew program on disk as a machine language file. Insert the disk in the drive and type BOOT "%UNNEW" and hit return. If you have a graphic screen active at the time, type GRAPHIC1:GRAPHIC0 in Direct mode before booting %UNNEW. After you boot %UNNEW, your Basic program will be restored.

```
1Ø REM C-128 UNNEW-L. K. SNYDER
2Ø BANK 15:FORI=2816TO2833:READA:POKEI,A:NE
   XT
3Ø BSAVE"%UNNEW",BØ,P2816TOP2834:END
4Ø DATA 165,45,133,251,165,46,133,252
5Ø DATA 16Ø,Ø,169,1,145,251,32,229,94,96
```

L. K. Snyder
Address unknown

$3BA C-128 SYS in reverse—I found a reference to an undocumented C-128 keyword in my copy of the *C-128 Programmer's Reference Guide*. The keyword is RREG, for *R*ead *REG*isters, and it works much like the SYS command. You can "read" the results of the last SYS you called with RREG A,X,Y,S. This reads the values of the Accumulator, X register, Y register and the Status register into variables A, X, Y and S, respectively. You can use any variables you like and can read any register by substituting commas to skip the other registers. For example, to put the value of the Y register into variable YR, use the command RREG ,,YR. This makes it very easy to pass parameters with SYS and read the results back into variables.

Here's a practical example that gives the current window size. Use ESC T to set the top of a window and ESC B to set the bottom.

```
1Ø REM C-128 RREG -JIM BORDEN
2Ø BANK15:SYS65517:RREG ,X,Y
3Ø PRINT"WINDOW IS"X+1"COLUMNS WIDE"
4Ø PRINT"AND"Y+1"LINES HIGH."
```

See the next trick for another example.

Jim Borden
Carlisle, PA

$3BB From Hi-Res to Ultra Hi-Res—My program converts a 40-column hi-res picture to Ultra Hi-Res format. The original picture should be loaded in as a picture (use BLOAD"NAME",P8192 to load just the picture, and substitute P7168 in the BLoad command to load the picture and color) and then saved to disk with BSAVE "filename", B0, P8192 TO P16384. Then load and run the VIC/Ultra Hi-Res program.

The program converts the 320 × 200-pixel format of the VIC screen to the 640 × 200 format of the 80-column hi-res screen. In addition, the width is stretched in the process. This takes about five minutes in Fast mode. Now load the Ultra Hi-Res program and run it. You can then load your picture with @LOAD,0,"filename".

```
1Ø REM VIC=>U.H.RES-DANIEL MONTES
2Ø REM ML SUB BY JIM BORDEN
3Ø FAST:DIM A$(319)
4Ø FOR K=4864TO49Ø4:READX:POKEK,X:NEXT
5Ø DATA 141,41,19,169,2,141,42,19,169,Ø,162
6Ø DATA 255,232,224,4,24Ø,1Ø,14,41,19,144,2
   46
7Ø DATA 29,37,19,176,241,72,2Ø6,42,19,2Ø8,2
   31
8Ø DATA 1Ø4,17Ø,1Ø4,96,192,48,12,3
9Ø PRINT:INPUT"SOURCE FILENAME";S$
1ØØ DOPEN#8,(S$+",P"):IF DSTHENPRINT:PRINTD
    S$:DCLOSE#8:GOTO9Ø
11Ø PRINT:INPUT"ULTRA FILENAME ";T$
12Ø DOPEN#9,(T$+",P,W"):IF DSTHENPRINT:PRIN
    TDS$:DCLOSE#9:GOTO11Ø
13Ø PRINT:PRINT"WORKING ON ROW:";
14Ø GET#8,C$,C$:FORF=1TO25:PRINTF;
15Ø FORI=ØTO319:GET#8,A$(I):NEXT
16Ø FORJ=ØTO7:FORI=JTOJ+312STEP8
17Ø A1=(ASC(A$(I)+CHR$(Ø)))
18Ø SYS4864,A1:RREG A1,X1
19Ø PRINT#9,CHR$(A1)CHR$(X1);
2ØØ NEXT:NEXT:NEXT:DCLOSE:PRINTCHR$(7)
```

Daniel Montes
Cordoba, Argentina

$3BC Fastest Datafile 64—Since I've discovered the usefulness of Datafile and its peripheral programs (*RUN*, November and December 1984), I've gradually increased the number of applications. One of my databases contains 438 records, and sorting it before printing it out used to take 426 seconds. I found that if I compiled Datafile with a compiler such as Blitz!, the same sort took only 90 seconds!

Searches and file loads also execute faster. A typical 500-record search was cut from 18 seconds to 6 seconds, while loading the file was reduced from 120 seconds to about 80 seconds.

The beauty of Datafile is that it can be loaded and put into use before most commercial database programs get their first screen. Compiling it makes it even more beautiful!

Phil Hysell
Louisville, KY

$3BD Datafile Find option improvement—I've made some changes to Mike Konshak's excellent Datafile program so that you can use its Find option to locate a keyword anywhere within a field. The original Datafile only found a match at the beginning of a field. Make these changes to the program:

```
1 REM DATAFILE SUBSTRING FIND - KENNY LAWSON
```

→

Sensational Prices!
. . . On Our Most Popular Items!

from microPal® . . .

THE 49¢ DISKETTE!

Are you paying too much for diskettes? Try our first quality, prime, 5¼" diskettes (no rejects, no seconds) at these fantastic sale prices and save, save, SAVE! Disks are packaged in boxes of 50; including diskettes in sleeves, labels, and write-protect tabs.

Each diskette is certified to be 100% error free and comes with a lifetime warranty (if you have a problem, we'll replace the diskette). All diskettes include hub reinforcement rings and write-protect notch.

All diskettes are double density and work in either single or double density drives.

SS, DD Diskettes, Box of 50
32391 **$24.50–49¢ ea.!**

DS, DD Diskettes, Box of 50
32403 **$29.50–59¢ ea.!**

Lowest Cost, Best Performing Star Printer Ever!!

NEW

star

NP-10. Ideal for school ***and*** home use, the newest printer in the Star line promises to be a best-seller due to its great features and unbeatable price! You get superb draft printing at 100 cps and its easy to switch to crisp, precise near letter quality at 25 cps. Easy front panel operation allows you to change modes at the simple touch of a button. Tractor and friction feeds standard. Printing is bidirectional in draft mode and unidirectional in bit image and NLQ modes. Five character sets are available in draft mode including italic and international characters, with three sets available in NLQ. 2K buffer. Standard parallel interface. Full one-year warranty. Sug. Retail $279.00

64204 NP-10 Printer **$CALL FOR LOWEST PRICE!**

★ THE BEST PRICES ★
★ THE BEST SERVICE ★
WHY SHOP ANYWHERE ELSE?

THE FAMOUS SLIK STIK™ **ONLY $6.95!**

The Slik Stik™ has been a favorite for years. . .and for good reason. It's just the right combination of responsiveness and accuracy. And the price can't be beat! From Suncom. 90 day warranty. Connects directly to Commodore Computers.
42086 **$6.95**

POWER and PROTECTION FOR YOUR C-64!®

POW'R PAK 64
from MicroPal®

Pow'r Pak is a replacement power supply (1.5 amp) for the Commodore 64® . . . but that's not all! Pow'r Pak also supplies two additional surge protected outlets (120V) for monitor, disk drive, or other peripherals. On/off switch. Fuse protection. Sturdy all-metal casing is ventilated for heat dissipation. Full 1 year warranty.

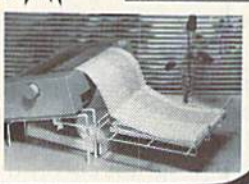
34910 **$49.95**

Space Saving Printer Stand

NEW LOW PRICES!

At last a printer stand priced for homes and small offices! This great stand from Suncom is elevated so you can place your paper underneath. Features heavy duty welded steel wire construction and has a vinyl coating to reduce noise and vibration. Another plus . . .the printer is held at an angle that makes it much easier to see your output as it is being printed. Available in two widths: 12" for most 80 column printers, and 18" for most 132 column printers.

33232 12" Printer Stand . . . . . (Was $14.95) **ONLY $ 6.95**
33246 18" Printer Stand . . . . . (Was $22.95) **ONLY $12.95**



Paper Tray

Ever wondered what to do with the printout that comes out of the printer and tends to spill all over the table and floor? The Suncom Paper Tray attaches to the rear of all Suncom stands and receives the printed paper as it comes out of the printer. Helps to neatly fold and stack it! Sug. Retail $14.95

42091 . . . . . **$11.95**

Our Lowest Price Ever On Diskette Storage!

ONLY $4.95

INNOVATIVE CONCEPTS, INC.

FLIP SORT 70

- Stores and files up to 70 5¼" diskettes.
- Includes 5 index dividers for organization of filing and retrieval.
- Molded from highly durable plastic.

Sug. Retail $7.95
Regular Tenex Price $6.95
43375 **SUPER SALE $4.95**

DUST COVER and "EVERYTHING BOOK" SPECIAL OFFER

Get to know us by ordering this great dust cover for your C-64 or C-128 and our catalog, "The Everything Book for the C-64 and C-128 Home Computers," for $2.95 (no extra shipping and handling charges). Cover is antistatic, translucent 8-gauge vinyl sewn to our exacting standards with reinforced seams. Discover the savings and easy shipping available from TENEX Computer Express!

$2.95

31627 C-64 Dust Cover and Catalog (R2B)
38464 C-128 Dust Cover and Catalog (R2B)

The Right Interface For All Your Printing Needs!!

PPI with graphics

". . .*a sound investment for your Commodore.*" RUN, *Dec. '85* This high-performance graphics parallel printer interface from DSI for C-64 and VIC-20 emulates a Commodore printer. Comes with cables and user's manual.

33565 . . . . . **$39.95**

Super Graphix. Features 8K buffer, 10 printing modes, 3 internal screen dumps and top mounted dip switches. Supports superscript, subscript, underlining, bold face, and a choice of 9 character widths. From Xetec.

41769 . . . . . **$69.95**

Super Graphix Jr. A more economical version of the Super Graphix, featuring graphics, normal and correspondence quality printing. Compatible with all major printers. From Xetec.

41774 . . . . . **$49.95**

From Your Friends At
TENEX Computer Express

We gladly accept mail orders!
P.O. Box 6578
South Bend, IN 46660

Ad R2B

Questions? Call 219/259-7051

SHIPPING CHARGES

ORDER AMOUNT	CHARGE
less than $20.00	$3.75
$20.00–$39.99	4.75
$40.00–$74.99	5.75
$75.00–$149.99	6.75
$150.00–$299.99	7.75
$300 & up	8.75

MasterCard VISA

NO EXTRA FEE FOR CHARGES
WE VERIFY CHARGE CARD ADDRESSES

ORDER TOLL FREE
1-800-348-2778
INDIANA ORDER LINE 1-800-225-6838

Foreign Orders add $4.00. Heavy items ship at actual cost.

COMMODORE 64 is a registered trademark; and COMMODORE 128 is a trademark of Commodore Electronics, Ltd.

```
229 LT = LEN(T$)
231 FORQQ = 1TOLEN(REC$(K%(I),SF) - LT + 1)
232 IFT$ = MID$(REC$(K%(I),SF),QQ,LT)GOTO236
233 NEXT
```

The changes should work on any Commodore computer. However, if you're using a C-128 in 128 mode, you can use this line to replace all of the above lines:

```
232 IFINSTR(REC$(K%(I),SF),T$)GOTO236
```

Please note that this could be used as a Keyword Search subroutine in your own applications programs, also. Just be sure that your program uses the proper variable names.

Kenny Lawson
Indianapolis, IN

$3BE Scroll control tip—Memory location 214 always contains the physical screen line number of the cursor (0 to 24), and, in programming, it is a useful location for controlling loop output to the screen. For example, when PEEK (214) is equal to a line number you've chosen, branch to a routine that waits for the user to press a key, then clear the screen and continue output. You can use 214 only on the VIC and C-64. In C-128 mode, use location 235 and on the Plus/4, use location 205.

Joseph Charnetski
Dallas, PA

$3BF C-64 great escape—Have you ever been trapped in an input on your C-64, only to be forced to exit using the return key? Well, here's a better exit. Simply hold down the shift key, press the run-stop key and then quickly release the shift key. This is done with a sort of rolling motion. A note of caution: If you use a Datassette, make sure none of its buttons are depressed; otherwise it could cause a program to begin loading from the Datassette and ruin the program currently in memory.

David Hinkle
Nanty Glo, PA

$3C0 C-64 letter catcher—This game for the C-64 can sharpen your reflexes and typing skills, and you can have fun at the same time.

When you run the program, a randomly chosen letter appears at the bottom of the screen and moves slowly upward. If you press the corresponding key before the letter reaches the top, a point is added to your score and a new letter is chosen. The quicker your fingers fly, the more points you can get. The program increases speed a little after each letter. If you touch-type, you'll learn to type faster.

```
1Ø REM LETTER CATCHER - CHING KO
2Ø DT=1ØØ:S=Ø:CH=RND(-TI)
3Ø PRINTCHR$(147):CH=INT(RND(1)*26)+65
4Ø FORDE=1TO23:PRINT:NEXT
5Ø PRINT:PRINTTAB(INT(RND(1)*37)+2)CHR$(CH)
   ;:I=24
6Ø GETK$:IFK$<>CHR$(CH)GOTO9Ø
7Ø PRINT CHR$(147):S=S+1:PRINTTAB(18);S
8Ø DT=DT-1:FORDE=1TO25Ø:NEXT:GOTO3Ø
9Ø FORDE=1TODT:NEXT
1ØØ PRINT:IFI>ØTHENI=I-1:GOTO6Ø
11Ø PRINTCHR$(147)"YOUR SCORE WAS";S:PRINT
12Ø PRINT"PRESS 'RETURN' TO PLAY AGAIN."
13Ø INPUT K$:IFK$=""GOTO2Ø
```

Ching Ko
McPherson, KS

$3C1 C-64 trace—Debugging a Basic program is made easier with a trace utility. These utilities trace the execution of a program and display the line numbers. Most traces display the lines on the screen while the program is running. This can cause problems if your program prints to the screen, resulting in scrambled displays. Also, when listing a program to compare it with the trace, you can accidentally scroll the trace values right off the screen.

To overcome these annoyances, C-64 Trace stores all executed lines in memory (up to 2000 of them) while your program is running, and it allows the numbers to be recalled later as often as you wish. To use C-64 Trace, type SYS820 to turn it on, and then run your program. (Turning on the trace clears all previously saved line numbers.)

To display the executed lines and shut off the trace, type SYS916. The line list can be stopped at any time with the run-stop key. Also, if there's a For-Next loop on a line, rather than display the same line many times, C-64 Trace does it just once. Lines containing only REMs are also ignored.

```
1 REM C-64 TRACE UTILITY-RICHARD PENN
1Ø FORU=82ØTO99Ø:READQ:POKEU,Q:C=C+Q:NEXT
15 IFC<>21791THENPRINT"DATA ENTRY ERROR!":S
   TOP
2Ø PRINT"{SHFT CLR}SYS82Ø - TRACE ON":PRINT
   "SYS916 - DISPLAY LINES":POKE179,4
1ØØ DATA 169,77,141,1Ø,3,169,3,141,11,3,169
    ,Ø,133,251,141,146,3,141,147
11Ø DATA 3,169,192,133,252,96,72,138,72,152
    ,72,8,165,157,2Ø1,Ø,2Ø8,36,16Ø
12Ø DATA Ø,165,57,166,58,2Ø5,146,3,2Ø8,8,23
    6,147,3,2Ø8,3,76,125,3,141
13Ø DATA 146,3,145,251,32,134,3,142,147,3,1
    38,145,251,32,134,3,4Ø,1Ø4,168
14Ø DATA 1Ø4,17Ø,1Ø4,76,134,174,23Ø,251,165
    ,251,2Ø1,Ø,24Ø,1,96,23Ø,252,96,4
15Ø DATA Ø,169,Ø,133,253,169,192,133,254,16
    Ø,Ø,165,253,197,251,2Ø8,6,165,254
16Ø DATA 197,252,24Ø,3Ø,169,13,32,21Ø,255,1
    77,253,17Ø,32,211,3,177,253,32,2Ø5
17Ø DATA 189,32,211,3,32,234,255,32,225,255
    ,24Ø,3,76,156,3,169,134,141,1Ø
18Ø DATA 3,169,174,141,11,3,96,23Ø,253,165,
    253,2Ø1,Ø,24Ø,1,96,23Ø,254,96
```

Richard Penn
Montreal, Quebec, Canada

$3C2 64 Auto Menu booter—The Auto Menu program in the April 1986 issue of *RUN* is really great, and I use it on all my disks. However, if each program on the disk has the following lines as an Exit routine, the Auto Menu program can be loaded automatically and run.

```
1Ø REM AUTO MENU BOOTER-THOMAS W. O'DEA
625ØØ INPUT"DO YOU WANT TO RUN THE PROGRAM
      AGAIN{4 SPACEs}(Y/N){2 SPACEs}Y{3 CRS
      R LFs}";R$
```

Continued on p. 82.

Now Run puts a powerful new research tool right at your fingertips.

If you need instant access to news and information about your competition, your profession, technology, finance, law, or just about any other subject, *Run's* SearchLink will give it to you.

Run's new SearchLink service gives you easy access to more than 800 databases in just minutes!

And SearchLink gets you answers to all sorts of questions from these databases—like details about new products and services, or market facts, or emerging technologies. You can get information on computers, medicine, investments, law, chemistry, engineering and much more. Everything from accounting to trademarks to history or geography.

SearchLink is easy to use and inexpensive.

All you need is a credit card and a computer with modem.

No subscriptions. No passwords. No difficult manuals to learn. Just call 800-843-7337 with your computer and log on. You pay only $7.99 per search (a few databases carry surcharges) plus 25 cents per minute for telecommunications and $2 for each abstract you want to see. (You can also get hard copies). You can charge everything to MasterCard, VISA, or American Express.

SearchLink provides 24-hour on-line assistance.

SearchLink even gives you free on-line tips from trained SearchLink search specialists if you have problems or questions about your searching. Just type "SOS" when you're on-line!

SearchLink gets you to the information you want.

If you've ever wanted to access databases offered by ADP Network Services; BRS; Data-Star; Datasolve; DataTimes; Dialog; G-Cam Serveur; NewsNet; Pergamon InfoLine; SDC; Questel; or VU/TEXT, SearchLink will access databases from all of them—without a special subscription or knowledge of special search languages.

We can't list all of SearchLink's more than 800 databases, but just to give you an idea, here are *some* of the databases available under the topic "COMPUTER."*

- Business Software Database
- COMPENDEX®
- Computer Database
- COMPUTERPAT
- INSPEC
- Menu—The International Software Database
- Microcomputer Index
- Online Microcomputer Software
- SUPERTECH

And here are just a few of the other popular databases you can access with SearchLink.

- ABI/INFORM
- Chemical Abstracts
- Disclosure *(Selected databases)*
- Donnelley Demographics
- Dun & Bradstreet *(Selected databases)*
- ERIC
- PTS PROMT
- TRINET
- Trademarkscan
- Standard and Poor's Corporate Descriptions

Call 800-843-7337 now!

Put the power of knowledge to work for you right now. Call 800-843-7337 (THE-SEER) on your computer and get the answers you need to stay ahead.

*A complete list of the databases is available on SearchLink.

SEARCHLINK

From Run

Your link to the world of information.

R U N

An International Data Group Service

A CWCI Publication
An International Data Group Company

SearchLink is sponsored by the National Federation of Abstracting and Information Services.

NFAIS is a professional association of database producers.

SPECIAL EDITION!

Discover how much more you can do with PRODUCTIVITY PAK II!

Packed with productive applications for your C-64 and C-128, ***including many never-before-published!***

No matter how you and your family use your C-64 or C-128, you'll make short work of your most challenging computer projects with ***PRODUCTIVITY PAK II***—the blockbuster sequel to last year's best-selling Productivity Pak!

Here, on a ready-to-run disk, you get *more than a dozen top-rated programs* for Word Processing...Telecommunications...Database Management...Spreadsheet Calculating *(featuring the popular Datafile Series)*...PLUS Education, Graphics and Utilities.

To get your ***PRODUCTIVITY PAK II*** *disk with a fully illustrated documentation booklet and loading instructions, complete the order form below or* ☎ *CALL TOLL FREE* ***1-800-258-5473*** *(In NH, dial 1-924-9471).*

YES! I want to increase my productivity with *ReRUN*'s new ***PRODUCTIVITY PAK II.*** Please send disk and booklet at $21.47. (Includes postage).

☐ Payment enclosed ☐ Amex ☐ Visa ☐ MC

Card # Exp. Date

Signature

Address

City State Zip

*Commodore 64 and 128 are registered trademarks of Commodore Business Machines, Inc.

ReRun • Elm Street • Peterborough NH 03458 **3-87P**

FOR THE C-64...

THE DATAFILE SERIES Here's the newest version (3.6) of the most popular database management program ever published in *RUN*, now fully updated exclusively for this special *ReRun* by the author, Mike Konshak! Includes ***DATAFILE***, ***DFPRINT***, and ***DFCALC!***

"One fantastic piece of work!"
—Fred Burkhart

"Simpler to use and more flexible than most of the 'commercial' programs!"
—P. Kirkpatrick

CREATE NEW FILE QUIT PROGRAM
ADD RECORD TO CURRENT FILE
MODIFY RECORD IN CURRENT FILE
DELETE RECORD IN CURRENT FILE
VIEW OR EDIT FILE
SORT RECORDS BY FIELD
PRINT RECORDS USING DFPRINT/DFCALC
READ (LOAD) OLD FILE FROM DISK
WRITE (SAVE) CURRENT FILE TO DISK
$ DISK DRIVE COMMANDS @ DIRECTORY
THERE ARE 8 RECORDS IN MEMORY

RUN SCRIPT 64 Here's power and flexiblility in a word processor, written by *RUN*'s noted programmer, Robert Rockefeller. Now totally updated with more than 100 features and options!

RUNTERM PLUS (With Autodialing)—The hit telecommunications program lets you tap into infinite sources of information including CompuServe, Delphi and The Source. And now it can be used with autodialing and a wider choice of modems including the 1650, and the 1670—plus other 1650 compatibles.

DISK BACKUP A handy disk utility that permits you to make copies of your *Productivity Pak II* disk.

CONSTRUCTION SET A graphics utility that helps you create 6 consecutive scrolling background screens. Great for creating adventure games!

LOGO FOR KIDS A super LOGO language using Turtle Graphics designed especially for children.

MENU 64 This disk utility displays all programs on your disk and lets you run them with ease.

...AND FOR YOUR C-128

RUN SCRIPT 128 The 128 version of the popular RUN SCRIPT word processor by Robert Rockefeller. Features a full 80 columns, larger text files, plus graphics capabilities.

GRADEBOOK 128 A valuable classroom management tool for teachers.

REMINDER 128 The all-purpose "desktop accessory" that puts your memos and appointments at your fingertips.

MENU 128 This menu program lets you automatically run your 128-mode programs.

☎ TOLL FREE 800-258-5473

VALUE-SOFT

9513 S.W. Barbur Blvd. M-56
Portland, Oregon 97219

Dealers & Schools Welcome

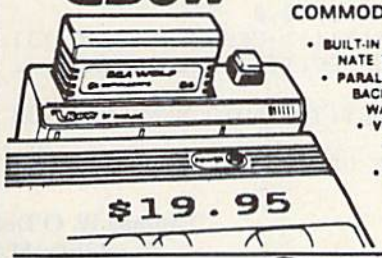
For ORDERS only

1-800-544-SOFT

Oregon call 1-503-246-0924
Add $2.00 S. & H. Visa/MC gladly

'LBow™

CARTRIDGE PORT CONVERTER
CUSTOMIZED DESIGNED FOR
COMMODORE 64 & 128 COMPUTERS



- BUILT-IN "WARM RESET" BUTTON WILL ELIMINATE TURNING POWER OFF/ON TO RESET
- PARALLEL EXPANSION PORT ON L'BOW'S BACKSIDE ALLOWS SIMULTANEOUS HARDWARE & SOFTWARE ACCESS.
- VERTICAL CARTRIDGE PORT MAKES CARTRIDGE USE MUCH EASIER.
- NO MORE STRESS ON THE COMPUTER'S PRINTED CIRCUIT BOARD FROM THE PRESSURE OF PLUGGING IN CARTRIDGES SINCE 'LBOW PUTS IT ALL ON THE TABLE TOP.

DISK DOUBLER

CUTS A PRECISION SQUARE NOTCH IN THE DISKETTE AT EXACTLY THE RIGHT SPOT SO THE "FLIPSIDE" CAN BE USED

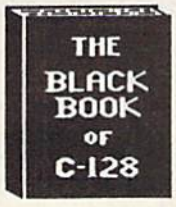
C-64 POWER SUPPLY $29.95

CABLES ETC.

6 Ft. 6 pin, male both ends	#	B66	$6.95
9 Ft. 6 pin, male both ends	#	B69	$8.95
18 Ft. 6 pin, male both ends	#	C618	$16.95
6 Ft. 6 pin, male/female	#	A66	$6.95
9 Ft. 6 pin, male R-ang/male	#	R69	$9.95
6 Ft. Monitor, 5 pin/4 RCA	#	D56	$9.95
6 Ft. Monitor exten., 5 pin	#	E56	$6.95
6 Ft. Centronics, male/male	#	C6MM	$14.95
6 Ft. Cent., male/female	#	C6MF	$14.95
6 Ft. RS-232, male/male	#	G625	$14.95
100 write protect tabs	#	TAB	$1.49
100 Tyvek disk sleeves	#	DS	$5.95
6 jewelers screw drive set	#	SC6	$4.95

PROTECTION REVEALED NOW $15.95

A begginers guide to software protection. Become a master of illusion. Book is 141 pages, free disk of 21 utilities included



REFERENCE BOOK $15.95

The best friend a C128 owner ever had. Includes C64, 128, CPM 3.0, 1541, & 1571 drives 261 pages, 75 easy charts & tables. Think of Black Book as a dictionary, always ready to answer your questions.

BEGINNER'S PAK 64 $15.95

1. 150 popular subroutines on disk, add to your own programs, graphics, sorts, etc.
2. poster (21x28) screen/color memory map.
3. extensive C64 memory map
4. 18 bound cheat cards, commands at hand

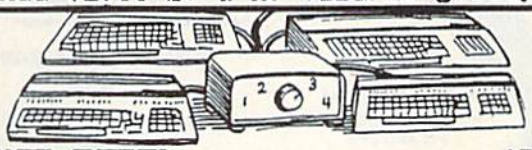
All four items in one great package price

CARTRIDGE PORT CABLE $19.95

10 in. extension cable for cartridge port

APROSPAND-64 $29.95

4 slot switchable expansion board, plus a reset button/fuse protection. Plugs into cartridge port, has 4 switchable (singly or any combination) expansion connectors. Gives your C64 or 128 full expandability. This is superbly designed unit.



$ SAVER SWITCH $29.95

Vic-20, C16, Plus 4, C64, C128, AB switch 2 computers to 1 drive and printer or two printers to 1 computer. 3 female sockets, plugs in in seconds.

SUPER SAVER 4 $79.95

4 Commodore computers to 1 drive/printer, great for schools or business.

MONITOR SWITCH $39.95

Share 1 monitor with 2 computers, change output at the turn of a knob. The box has 2, 5 pin cables, 1 to each computer, plus a 8 pin socket for the monitor. C64/C128

CENTRONICS AB SWITCH $39.95

All 36 pins switched, female connectors, gold pins, high quality push button.

CENTRONICS ABCD SWITCH $59.95

All features of the AB except 4 computers to one device. Rotary switch.

RS 232 AB SWITCH $39.95

All 25 pins switched, female connectors, gold pins, high quality push button.

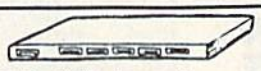
128 CABLE 40/80 column $9.95

80 columns with the 1701/1702 monitors.

128 40/80 switchable cable $21.95

80 columns, plus built-in switch

POWER CENTER $59.95



EMI filtering, 15 AMP breaker, surge protection, lighted rocker switches, heavy all metal case. $5.00 shipping this item only

ULTRAVOX Sound System $39.95

Add an exciting new dimension to sound on the C64/C128. Creates 100% stereo, with a built-in amp to power speakers directly. Also works with VCR & TV

E.M.C.S. Music Construction Set $29.95

The powerful music processor for the C64, Plays 32nd notes, allows long compositions A 2 disk set, also 40 pre-recorded songs.

BRAND X 64 Disk Cataloger $19.95

4,000 files or 100 disks. Add, save, etc. Identifies 14 file types, print lists in 1, 2 or 3 columns, prints disk labels.

VIDEO LOG 64 $19.95

Catalog the movies you have saved on your VCR. 1,000 films or 250 tapes. Print list of titles/tape #, labels for tapes. Data saved: title, start/end, length, category

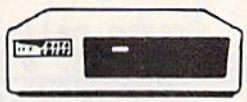
Circle 121 on Reader Service card.

What C-64* & C-128* USERS HAVE BEEN WAITING FOR!!

HARD DISK SYSTEM W/ FLOPPY

DATA CHIEF™

10 MBYTE DRIVE
Stores 60 Floppies!



* FAST
* EXPANDABLE
* TRANSPARENT OPERATION
* MULTIPLE CHAINED PARTITIONS
* GEOS** COMPATIBLE
* SUPPORTS SINGLE SIDED C-128 AND CPM
* BUILT-IN FLOPPY DRIVE
* SUPPORTS ALL 2.0 TO 7.0 (C-128) DOS COMMANDS
* REPROGRAMMABLE "BOS PAK"" (BUFFERED OPERATING SYSTEM)

20 Mbyte Model HFD-20
ONLY $995.00

10 MBYTE MODEL HFD-10
ONLY $895.00

5 MBTYE MODEL HFD-5
ONLY $695.00

The DATA CHIEF has been designed by C-64 users for C-64 users with important features like:
Storage in original individual disk format
— Easy Access to programs via Disk Number
— Example: for disk # 60: "OPEN 15, 8, 15, "H60"
Standard Utilities Included
— Includes Wedge Commands
135 Watt Power Supply
Metal Enclosure houses up to 3 each 1/2 Ht Hard Disks
— Provides Excellent Monitor Stand 'P.C. style
— Allows room for future expansion
Complete Operating Manual
1 Year Full Warranty

The DATA CHIEF is perfect for software and hardware developers, business users, students, and serious computer experimenters as well as for bulletin boards and data base systems.
TO ORDER SEND CERTIFIED CHECK OR MONEY ORDER TO:

I. C. T. rol Inc
103 BAUGHMAN'S LANE
SUITE 301
FREDERICK, MD 21701

Maryland residents add 5% sales tax
For more information call:
(301) 371-4000
Allow 4-6 weeks delivery (U.S. Only)
* C-64 & C-128 are trademarks of Commodore Electronics, Ltd.
** GEOS is a trademark of Berkeley Softworks.

Circle 35 on Reader Service card.

THE AMAZING
VOICE MASTER®

ENTER THE FINAL FRONTIER OF MAN-TO-MACHINE COMMUNICATIONS

There is nothing else like it. Voice Master gives both speech output and voice recognition with this single hardware product! Your voice controls programs, or home appliances, robots, and more with spoken commands. Verbal response back gives status, verifies, or requests your reply! Speech output and recognition patterns are recorded in with your voice. Or use the voice of your friend, boss, teacher, mother, even the family pet! Programming is simple with new commands added to BASIC. A music bonus program lets you write and compose musical scores simply by humming the tune. Unlimited applications for fun, education, and commercial use. Design your own programs for profit. Speech and recognition quality unsurpassed by even the most sophisticated machines. Only Covox provides this high-tech marvel at a price less than most common peripherals.

The Covox Voice Master comes complete with all hardware and software for only $89.95. (Add $4 shipping and handling for USA, $6 Canada, $10 overseas.) Available for Commodore 64/128, Apple II, II+, IIc, IIe, Atari 800, 800XL, 130 XE. Specify when ordering. Visa, MasterCard phone orders accepted.

Call or write for FREE Voice Master Infopak and special combination package offers.

COVOX INC., DEPT. RN
675-D Conger Street • Eugene, Oregon 97402 • U.S.A.
Area Code (503) 342-1271 • Telex 706017 (Av Alarm UD)

Circle 300 on Reader Service card.

Magic

From p. 78.

```
6251Ø IF R$="Y"THEN RUN
6252Ø IFR$<>"N"THENPRINT"{3 CRSR UPs}":GOTO
      625ØØ
6253Ø POKE53281,1:POKE646,Ø
6254Ø PRINT"{SHFT CLR}{11 CRSR DNs}"SPC(13)
      "LOADING MENU"SPC(1Ø8)"PLEASE WAIT...
      "
6255Ø PRINT"LOAD"CHR$(34)"AUTO MENU"CHR$(34
      )",8"
6256Ø PRINT"{4 CRSR UPs}":POKE631,131:POKE1
      98,1:END
```

Thomas W. O'Dea
Randolph, MA

$3C3 CalcAid 128/64—CalcAid 64 (see *RUN*, November 1986) lets you view its seven-column spreadsheet only three columns at a time. Adding the lines below will give you full use of the C-128's 80-column mode so that you can view all seven columns at once and use the Fast mode. The C-128's function keys are redefined to the function key values for the C-64 (except that you cannot control the 80-column screen colors). Use CTRLX to end the program and restore your original function key definitions. The 40-column mode will also work, but, of course, CalcAid returns to the three-column display, and you must then use Slow mode.

```
2 REM CALCAID 64/128 - JIM BORDEN
3 REM CHANGES TO ALLOW 4Ø/8Ø COL
6 PA=1:Z=Ø:P=1ØØ:SW=27:CW=2:IFFRE(Ø)=FRE(1)
  GOTO2Ø
8 IFPEEK(215)THENSW=23:CW=6:SW$="{39 SPACEs
  }"
9 F9=1:FORCD=4Ø96TO4113:POKE CD+238,PEEK(CD
  ):NEXT
1Ø FORCD=4Ø96TO4113::READ R:POKE CD,R:NEXT
11 DATA 1,1,1,1,1,1,1,1,Ø,Ø:REM NEW F KEYS
12 DATA 133,137,134,138,135,139,136,14Ø
7Ø IFG$=CHR$(29)THENIFC<SWTHENC=C+1:GOSUB1Ø
   ØØØ:GOTO3Ø
11Ø IFG$=CHR$(24)ANDF9=1THENFORCD=4Ø96TO411
    3:POKE CD,PEEK(CD+238):NEXT:END
216Ø C=VAL(MID$(IN$,2,2)):IFC>29-CWTHENC=29
     -CW
2162 IFASC(LEFT$(IN$,1))>7ØTHENRD=6
2163 IFASC(LEFT$(IN$,1))<=7ØTHENRD=ASC(LEFT
     $(IN$,1))-65
1ØØ1Ø PRINTCHR$(18);"{4Ø SPACEs}"SW$
1ØØ15 IFZ=1THENPRINTTAB(5);CT;TAB(16);C+1;T
      AB(27);C+2:GOTO1ØØ2Ø
1ØØ19 PRINTTAB(5);C;TAB(16);C+1;TAB(27);C+2

1ØØ2Ø IFCW>2THENPRINT"{CRSR UP}"TAB(38);C+3
      ;TAB(49);C+4;TAB(6Ø);C+5;TAB(71)C+6
1ØØ23 FORR=1TOCW:PRINTTAB(2+11*R);DA$(RD,C+
      R);:NEXT
1ØØ24 PRINT
1ØØ27 FORR=1TOCW:PRINTTAB(2+11*R);DA$(RT,C+
      R);:NEXT
1ØØ28 PRINT
1ØØ6Ø FORRR=1TOCW:PRINTTAB(2+11*RR);DA$(R,C
      +RR);:NEXT
1ØØ7Ø PRINT
```

Jim Borden
Carlisle, PA

**$3C4 C-64 blocks free**—If you'd like to know how many blocks remain free on a disk without listing the entire directory, simply enter LOAD"$$",8. Then list the "program." The result will display the blocks free on the disk but not the directory. You'll have to load a program (or a complete directory) before trying this trick again, otherwise a File Not Found error will result.

R. V. Taylor
Little Rock, AR

$3C5 C-64 On-Else—To check single-character entries for accuracy, I use a seldom-seen Basic command—On X Goto. You can use it much like If-Then-Else, which Basic 2.0 does not have. Here's a short program to show how it works.

```
10 PRINT"{SHFT CLR} TRY AGAIN? (Y/N)"
20 GET A$:IFA$=""GOTO20
30 ON-((A$="Y")+2*(A$="N"))GOTO 100,200:GOT
   O10
40 :END
100 PRINT"YES":END
200 PRINT"NO"
```

Line 30 allows the computer's logic to make the comparisons. If a comparison is true (e.g., A$ = "Y"), the computer will have a negative integer as the result (−1 in this example). If none of the comparisons match, the result will be a zero, which the computer's logic considers to be false.

Since only one can be true, the result in this short program would be 0 (none true), −1 if A$ = "Y" or −2 if A$ = "N". The minus sign after ON will change the sign to a positive number that ON can handle. If the value is 1, then the first Goto (100) branch is taken; if the value is 2, the program goes to 200; if the value is 0, then the statement *after* all line numbers is executed (the ELSE part), which, in this case, sends the program for another character.

Paul N. Lacey
Pickerington, OH

$3C6 Numbers vs. variables—Placing a number (such as .006347582) or a variable (N) equal to the number inside a For-Next loop can make an amazing difference in a Basic program's execution time. Try the program below, and note the time, in jiffies, used by the program.

```
10 Z=TI:X=1:N=.006347582
20 FOR T=1TO1000
30 X=X+.006347582
40 NEXT:PRINT "X=";X:PRINT TI-Z"JIFFIES."
```

Now change line 30:

```
30 X=X+N
```

and run the program, again noting the time in jiffies.

Although the only difference between the two programs is line 30 (using a number versus using a variable), the second version runs almost eight times faster. So, if you use a number more than a few times in a program, assign it to a variable instead.

Gary Robertshaw
Atascadero, CA ■

COMPUTER SWAP, INC. PRESENTS

The Commodore Show

FORMERLY A WCCA PRODUCTION

■ Fri., Feb. 20, 10:00-6:00
■ Sat., Feb. 21, 10:00-6:00
■ Sun., Feb. 22, Noon-5:00

NEW LARGER LOCATION

Brooks Hall, Civic Center
San Francisco

- EXHIBITS, EVENTS AND DOOR PRIZES
- NATIONAL COMMODORE SPEAKERS
- SHOW SPECIALS AND DISCOUNTS
- SEE THE LATEST INNOVATIONS IN HARDWARE/SOFTWARE TECHNOLOGY

The Commodore Show is the only West Coast exhibition and conference focusing exclusively on the AMIGA, Commodore 128 PC and C-64 marketplace.

REGISTRATION FEES:
One Day Only—$10
Three Day Pass—$15

For More Information Or To Reserve Exhibit Space Contact

COMPUTER SWAP, INC.
PO Box 18906, San Jose, CA 95158
(408) 978-SWAP • 800-722-SWAP • IN CA 800-252-SWAP

Circle 147 on Reader Service card.

IRS ACCEPTABLE
Double Entry Accounting System

NEW FOR CONTRACTORS

Bookkeeping Made Easy. . .

THE ACCOUNTANT™

KFS's Preferred Accounting System Now Includes an Integrated Construction Accounting Package Written Exclusively for Commodore 128™*

$149.95
THE ACCOUNTANT™
Basic Accounting Package

Standard Accounting Features:
- General Ledger
- General Journal
- Check Register
- Over 20 Reports Automatically
- Payroll Computation & Write-up
- Payroll Check Writing
- W-2 Printing
- Quarterly Report
- Accounts Receivable "Filing System"
- Customer Statements
- Accounts Payable "Filing System"

$199.95 Combo Package
THE ACCOUNTANT™ plus
THE INTEGRATED CONSTRUCTION PKG.

Advantages for Contractors:
- Completed Contract or Direct Costing
- Payroll Job Costing
- **FAST** Screen Displays of Current Job Status
- Handles 60 Jobs in Progress
- 3000 Transactions
- 10 Cost Classifications, 50 Phases
- Stores Estimated Job Costs for Comparison to Actual Expenditures

* *"Commodore's Microcomputers Magazine, Independent Reviewers, Rated* ***THE ACCOUNTANT™*** *—"#1 in Preference"— for Commodore 128™ Productivity"*

KFS Software, Inc.
1301 Seminole Blvd. #117
Largo, Florida 33540

For C.O.D. Orders Phone:
(813) 584-2355

(FL Residents add 5% Sales Tax)
(All figures in U.S. Dollars)

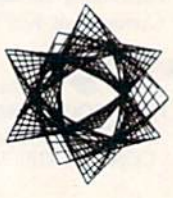
Circle 145 on Reader Service card.

From p. 43.

```
604 POKE54276,33:FORE=1TO1000:NEX
    T:POKE54276,16:RETURN
                          :REM*110
1500 REM DFPRINT 1.7 FOR DATAFIL
    E (C)1983-1986 BY MIKE KONS
    HAK                   :REM*213
1502 CLR:PRINT"{SHFT CLR}{CTRL 8
    }":POKE53281,0:POKE53280,0:
    OPEN4,4:OPEN3,3       :REM*37
1504 D$="":B$=CHR$(32):FORJ=1TO8
    0:S$=S$+B$:NEXTJ:PF=4:MF$=D
    $:RF$=D$:P=0          :REM*231
1506 NC=0:NL=0:PL=0:F1=0:F2=0:F3
    =0:L$=D$:RL=0:SB$=D$:CR$=CH
    R$(13)                :REM*147
1508 A$=D$:C$=D$:T%=6:I=0:J=0:K=
    0:M=0:N=0:RW=5:SF=0:Z=0:E$=
    "EOF"                 :REM*43
1510 EN=0:EM$=D$:ET=0:ES=0:A1$=D
    $:A2$=D$:A3$=D$:RW=5:LW=34:
    LT=1:L=0              :REM*59
1512 REM-ARRAYS           :REM*39
1514 DIM ML$(17,4),PC(18),TT$(5)
    ,HC$(17),RP$(17,4),LP(5),R$
    (5)                   :REM*43
1516 DIM F$(31),T%(31),L%(31),RE
    C$(31)                :REM*215
1518 LP(1)=1:LP(2)=37:LP(3)=73:L
    P(4)=109:GOTO1530     :REM*201
1520 REM-GET              :REM*207
1521 PRINT"{CTRL 8}{CRSR DN} {CT
    RL 9}{6 SPACEs}PRESS THE AP
    PROPRIATE KEY{7 SPACEs}":RE
    TURN                  :REM*108
1522 GETA$:IFA$=""THEN1522
                          :REM*241
1524 RETURN               :REM*51
1526 REM-START            :REM*49
1528 PRINT"{SHFT CLR} {CTRL 9}{6
     SPACEs}DATAFILE FAST PRINT
     PROGRAM{5 SPACEs}":GOTO154
    8                     :REM*249
1530 PRINT"{SHFT CLR} {CTRL 9}{6
     SPACEs}DATAFILE FAST PRINT
     REV 1.7{5 SPACEs}"  :REM*31
1532 PRINT" {CTRL 9}{8 SPACEs}BY
    MIKE KONSHAK (C)1986{7 SPA
    CEs}"                 :REM*63
1534 PRINT"{COMD 6}{CRSR DN} THI
    S PROGRAM WILL FORMAT AND P
    RINT A"               :REM*71
1536 PRINT" {CTRL 9}SEQ{CTRL 0}
    FILE, WHICH WAS PREVIOUSLY
    CREATED"              :REM*16
1539 PRINT" BY {CTRL 8}{CTRL 9}D
    ATAFILE{COMD 6}{CTRL 0}, DI
    RECTLY FROM THE DISK"
                          :REM*33
1540 PRINT" TO THE PRINTER.{2 SP
    ACEs}THE ORDER OF THE"
                          :REM*42
1542 PRINT" RECORDS WILL BE THE
    SAME AS THE MOST"     :REM*38
1544 PRINT" RECENT SORT AS WRITT
    EN IN THE CURRENT" :REM*114
1546 PRINT" FILE.":PRINT"{CTRL 8
    }{CRSR DN} PRESS {CTRL 2}{C
    TRL 9}ANY KEY{CTRL 0}{CTRL
    8} TO CONTINUE"       :REM*170
1547 GOSUB1522:GOSUB2856:GOTO152
    8                     :REM*177
1548 PRINTTAB(5)"{CRSR DN}{CTRL
    9}{CTRL 2}O{COMD 6}{CTRL 0}
    PEN RECORD FILE ON DISK"
                          :REM*172
1550 IFFL>0THENPRINTTAB(5)"{CRSR
     DN}{CTRL 9}{CTRL 2}R{COMD
    6}{CTRL 0}EPEAT RECORD FILE
    : {CTRL 0}{CTRL 2}"NF$"{CTR
    L 8}{CTRL 0}"         :REM*182
1551 PRINTTAB(5)"{CRSR DN}{CTRL
    9}{CTRL 2}${COMD 6}{CTRL 0}
     DISK DIRECTORY {CTRL 9}{CT
    RL 2}4{COMD 6}{CTRL 0}"
                          :REM*203
1552 PRINTTAB(5)"{CRSR DN}{CTRL
    9}{CTRL 2}Q{COMD 6}{CTRL 0}
    UIT PROGRAM"          :REM*252
1553 PRINT"{CRSR DN} TRANSFER TO
    :"                    :REM*95
1554 PRINTTAB(5)"{CRSR DN}{CTRL
    9}{CTRL 2}D{COMD 6}{CTRL 0}
     DATAFILE DBMS"       :REM*12
1555 PRINTTAB(5)"{CRSR DN}{CTRL
    9}{CTRL 2}C{COMD 6}{CTRL 0}
     DFCALC CALCULATED REPORTS"
                          :REM*219
1556 GOSUB1521            :REM*192
1558 GOSUB1522:IFA$="$"ORA$="4"T
    HENGOSUB1628:GOTO1528
                          :REM*254
1559 IFA$="D"THENPRINT"{SHFT CLR
    }{CTRL 1}LOAD"CHR$(34)"DATA
    FILE"CHR$(34)",8":GOTO1565
                          :REM*159
1560 IFA$="O"THENFL=1:GOTO1572
                          :REM*186
1561 IFA$="C"THENPRINT"{SHFT CLR
    }{CTRL 1}LOAD"CHR$(34)"DFCA
    LC"CHR$(34)",8":GOTO1565
                          :REM*181
1562 IFA$="R"THEN1584     :REM*140
1563 IFA$="Q"THENCLOSE5:CLOSE15:
    CLOSE3:CLOSE4:END     :REM*213
1564 GOSUB6002:GOTO1558   :REM*216
1565 PRINT:PRINT:PRINT:PRINT:PRI
    NT"RUN{CTRL 8}"       :REM*29
1566 POKE631,19:POKE632,13:POKE6
    33,13:POKE634,13:POKE635,13
    :POKE636,13           :REM*218
1568 POKE198,6:NEW:END    :REM*62
1570 REM-FILE NAME        :REM*68
1572 PRINT"{COMD 6}{SHFT CLR} AV
    AILABLE RECORD FILES ARE:{C
    RSR DN}{CTRL 8}":@"$0:DF]*"
                          :REM*188
1573 PRINT"{CRSR DN}{COMD 6}NAME
     OF RECORD FILE TO BE PRINT
    ED{CTRL 8}"           :REM*25
1574 PRINT" {CRSR DN}{2 SPACEs}"
    ;NF$:INPUT"{CRSR UP} ";NF$:
    IFNF$=""THENFL=0:GOTO1528
                          :REM*162
1576 OPEN15,8,15          :REM*208
1578 OPEN5,8,5,"0:DF] "+NF$+",S,
    R":GOSUB1618:IFEN=62THENGOS
    UB1620:FL=0:GOTO1528
                          :REM*136
1579 INPUT#5,R,F,X:GOSUB1618:IFE
    T=8THEN1528{30 SPACEs}
                          :REM*213
1580 FORN=1TOF:INPUT#5,F$(N),L%(
    N):NEXTN:GOSUB1618:IFET=8TH
    EN1528{8 SPACEs}      :REM*94
1582 CLOSE5:CLOSE15{54 SPACEs}
                          :REM*254
1583 REM-PRINT MENU       :REM*115
1584 PRINT"{CTRL 8}{SHFT CLR} {C
    TRL 9}{8 SPACEs}RECORD PRIN
    TOUT MENU{10 SPACEs}"
                          :REM*44
1585 PRINT"{COMD 6}{CRSR DN} PRI
    NT OPTIONS:";:IFK<>0THENPRI
    NT:GOTO1587           :REM*5
1586 PRINT"{COMD 3}NO FORMATS PR
    ESENT{CTRL 8}"{41 SPACEs}
                          :REM*44
1587 PRINTTAB(4)"{CRSR DN}{CTRL
    9}{CTRL 2}U{COMD 6}{CTRL 0}
    NFORMATTED LIST"      :REM*55
1588 PRINTTAB(4)"{CRSR DN}{CTRL
    9}{CTRL 2}R{COMD 6}{CTRL 0}
    EPORT FORMAT{2 SPACEs}{CTRL
     9}{CTRL 8}"RF$       :REM*132
1590 PRINTTAB(4)"{CRSR DN}{CTRL
    9}{CTRL 2}M{COMD 6}{CTRL 0}
    AILING LABELS {CTRL 9}{CTRL
     8}"MF$               :REM*18
1591 PRINT"{2 CRSR DNs}{COMD 6}
    CONFIGURE:"           :REM*235
1592 PRINTTAB(4)"{CRSR DN}{CTRL
    9}{CTRL 2}L{COMD 6}{CTRL 0}
    ABELS:{CTRL 8}"RW"{COMD 6}R
    OWS,{CTRL 8}"LW"{COMD 6}CHR
    S,{CTRL 8}"LT"{COMD 6}ACROS
    S"                    :REM*144
1594 PRINTTAB(4)"{CRSR DN}{CTRL
    9}{CTRL 2}P{COMD 6}{CTRL 0}
    RINTER: OPTION{CTRL 8}"P";:I
    FP=4THENPRINT"{2 CRSR LFs}{
    CTRL 9}SCREEN{CTRL 0}";
                          :REM*120
1595 PRINT:PRINTTAB(4)"{CRSR DN}
    {CTRL 9}{CTRL 2}${COMD 6}{C
    TRL 0} DISK DIRECTORY {CTRL
     9}{CTRL 2}4{COMD 6}{CTRL 0
    }"                    :REM*17
1596 PRINTTAB(4)"{CRSR DN}{CTRL
    9}{CTRL 2}E{COMD 6}{CTRL 0}
    XIT TO RESTART"       :REM*14
1598 GOSUB1521            :REM*234
1600 GOSUB1522:IFA$="" THEN1600
                          :REM*188
1602 IFA$="U"THENK=1:GOTO1730
                          :REM*52
1604 IFA$="R"THENK=2:GOTO3118
                          :REM*222
1605 IFA$="$"ORA$="4"THENGOSUB16
    28:GOTO1584           :REM*199
1606 IFA$="E"THEN1528     :REM*82
1608 IFA$="M"THENK=3:GOTO3118
                          :REM*110
1610 IFA$="L"THEN1940     :REM*24
1612 IFA$="P"THENGOSUB2856:GOTO1
```


CAD-3D

NEW ADVANCED 3-D GRAPHICS



For Commodore 64/128 in 64 mode
View Designs in Multiple Perspectives

- Versatile/Fast 360 degree rotation
- 2000 Line Display
- Printer capability with latest compatibles
- 1520 Plotter availability
- Disk Loading and Saving of Designs
- Superimpose Designs/ Modify Partial Designs
- Commercial Graphic program compatibility

Professional—Educational—Home Applications
Architects, Engineers, Designers, Programmers, Students

CAD-3D!! Enter me into the fastest growing field in graphic technology. At a special introductory price $49.95. Add $4.00 for shipping and handling, for C.O.D. add an additional $4.00, (California residents please include 6% sales tax).

***iht* Software**
2269 CHESTNUT STREET
SUITE 162
SAN FRANCISCO, CA 94123

ORDER LINE • (415) 923-1081
Dealers/Distributors inquiries welcomed.

Circle 120 on Reader Service card.

```
    584                     :REM*168
1614 GOSUB6Ø2:GOTO16ØØ      :REM*184
1616 REM-DISK ERROR         :REM*186
1618 INPUT#15,EN,EM$,ET,ES:IF(EN
     <2Ø)OR(EN=62)THENET=Ø:RETUR
     N                      :REM*254
162Ø PRINT"{CRSR DN} {CTRL 9}{CO
     MD 3}DISK ERROR{CTRL Ø}"EN"
     {CRSR LF}, "EM$","ET"{CRSR
     LF},"ES"{CTRL 8}":ET=8
                            :REM*4Ø
1622 PRINT"{CRSR DN}{COMD 6} PRE
     SS {CTRL 2}{CTRL 9}ANY KEY{
     COMD 6}{CTRL Ø} TO RESTART
     PROGRAM{CTRL 8}"       :REM*212
1624 GOSUB1522:CLOSE5:CLOSE15:RE
     TURN                   :REM*234
1626 REM-DIRECTORY          :REM*254
1628 PRINT"{SHFT CLR}{CTRL 8}";:
     @"$":PRINTTAB(25)"{COMD 6}P
     RESS {CTRL 2}{CTRL 9}ANY KE
     Y{CTRL 8}{CTRL Ø}":GOSUB152
     2:RETURN               :REM*74
1666 REM-LOAD REPORT        :REM*152
1668 PRINT"{COMD 6}{SHFT CLR} AV
     AILABLE REPORT FILES ARE{CT
     RL 8}:{CRSR DN}":@"$Ø:RP}*"
                            :REM*156
1669 PRINT"{CRSR DN}{COMD 6} NAM
     E OF REPORT FORMAT FILE?{CT
     RL 8}"                 :REM*187
167Ø PRINT" {CRSR DN}{2 SPACEs}{
     CTRL 8}";NF$:INPUT"{CRSR UP
     } ";RF$:IFRF$=""THEN1528
                            :REM*38
1672 OPEN15,8,15:OPEN5,8,5,"Ø:RP
     ] "+RF$+",S,R":GOSUB1618:IF
     ET=8THEN1528           :REM*84
1674 IFEN=62THENGOSUB162Ø:GOTO15
     28                     :REM*166
1676 INPUT#5,PW,NL,NC:GOSUB1618:
     IFET=8THEN1528         :REM*194
1678 FORJ=1TONL             :REM*22Ø
168Ø INPUT#5,TT$(J):GOSUB1618:IF
     ET=8THEN1528           :REM*196
1682 NEXTJ                  :REM*244
1684 FORI=1TONC             :REM*21Ø
1686 INPUT#5,PC(I),HC$(I):GOSUB1
     618:IFET=8THEN1528     :REM*14
1688 FORN=1TO3              :REM*44
169Ø INPUT#5,RP$(I,N):GOSUB1618:
     IFET=8THEN1528{27 SPACEs}
                            :REM*124
1692 NEXTN:NEXTI:INPUT#5,A1$:Z=V
     AL(A1$)                :REM*72
1694 S=ST:IFS<>ØTHEN1698:REM*162
1696 INPUT#5,E$             :REM*214
1698 CLOSE5:CLOSE15         :REM*114
17ØØ GOTO298Ø               :REM*1Ø
17Ø2 REM-LOAD LABEL         :REM*58
17Ø4 PRINT"{COMD 6}{SHFT CLR} AV
     AILABLE LABEL FILES ARE:{CT
     RL 8}{CRSR DN}":@"$Ø:ML]*"
                            :REM*12
17Ø5 PRINT"{COMD 6}{CRSR DN} NAM
     E OF MAILING LABEL FORMAT F
     ILE?"                  :REM*173
17Ø6 PRINT" {CRSR DN}{2 SPACEs}{
     CTRL 8}";NF$:INPUT"{CRSR UP
     } ";MF$:IFMF$=""THEN1528
                            :REM*15Ø
17Ø8 OPEN15,8,15:OPEN5,8,5,"Ø:ML
     ] "+MF$+",S,R":GOSUB1618:IF
     ET=8THEN1528           :REM*176
171Ø IFEN=62THENGOSUB162Ø:GOTO15
     28                     :REM*2Ø2
1712 INPUT#5,RW             :REM*84
1714 FORI=1TORW:FORN=1TO3   :REM*8
1716 INPUT#5,ML$(I,N):GOSUB1618:
     IFET=8THEN1528         :REM*246
1718 NEXTN                  :REM*56
172Ø NEXTI                  :REM*18
1722 S=ST:IFS<>ØTHEN1726:REM*122
1724 INPUT#5,E$             :REM*242
1726 CLOSE5:CLOSE15:GOTO3Ø68
                            :REM*15Ø
1728 REM-OPEN FILE          :REM*26
173Ø PRINT"{SHFT CLR} POSITIONIN
     G DRIVE..."            :REM*25Ø
1731 OPEN15,8,15:OPEN5,8,5,"Ø:DF
     ] "+NF$+",S,R":GOSUB1618:IF
     ET=8THEN1528{2 SPACEs}
                            :REM*43
1732 IFEN=62THENGOSUB162Ø:GOTO15
     28                     :REM*224
1734 INPUT#5,R,F,X:GOSUB1618:IFE
     T=8THEN1528            :REM*112
1738 FORN=1TOF:INPUT#5,F$(N),L%(
     N):NEXTN:GOSUB1618:IFET=8TH
     EN1528                 :REM*252
174Ø REM-OPTIONS            :REM*1Ø8
1742 AØ=Ø:PG=1:PL=Ø:L=Ø:PRINT"{S
     HFT CLR} {CTRL 8}{CTRL 9}{1
     1 SPACEs}PRINT OPTIONS MENU
     {8 SPACEs}"            :REM*26
1743 PRINT"{CRSR DN}{COMD 6} THE
     RE ARE {CTRL 8}{CTRL 9}"X"{
     CTRL Ø}{COMD 6}RECORDS IN {
     CTRL 9}{CTRL 8}"NF$ :REM*83
1744 PRINTTAB(4)"{CRSR DN}{CTRL
     9}{CTRL 2}A{COMD 6}{CTRL Ø}
     LL RECORDS IN FILE :REM*152
1746 PRINTTAB(4)"{CRSR DN}{CTRL
     9}{CTRL 2}F{COMD 6}{CTRL Ø}
     IND RECORDS WITH COMMON FIE
     LDS                    :REM*222
1748 IFK=3ANDPF=4THENPRINTTAB(4)
     "{CRSR DN}{CTRL 9}{CTRL 2}T
     {COMD 6}{CTRL Ø}EST LABEL(S
     )"                     :REM*28
175Ø PRINTTAB(4)"{CRSR DN}{CTRL
     9}{CTRL 2}E{COMD 6}{CTRL Ø}
     XIT BACK TO START"  :REM*3Ø
1752 IFK=2THENPRINT"{CRSR DN}{CO
     MD 6}POSITION PAPER IN PRIN
     TER AT TOP OF PAGE" :REM*18
1754 GOSUB1521              :REM*134
1756 GOSUB1522              :REM*2ØØ
1758 IFA$="A"THEN18Ø6       :REM*158
1762 IFA$="T"THEN1918       :REM*134
1764 IFA$="F"THEN1772       :REM*16
1766 IFA$="E"THENCLOSE5:CLOSE15:
     GOTO3118               :REM*226
1768 GOSUB6Ø2:GOTO1756      :REM*152
177Ø REM-FIND               :REM*22Ø
1772 PRINT"{CTRL 8}{SHFT CLR} {C
     TRL 9}{4 SPACEs}FIND RECORD
     S WITH COMMON ITEMS{4 SPACE
     s}{CRSR DN}"           :REM*2Ø8
1774 FORN=1TOF:PRINT" {CTRL 9}{C
     TRL 2}";N;"{COMD 6}{CTRL Ø}
     ";F$(N):NEXTN          :REM*154
1776 INPUT"{CRSR DN} WHICH FIELD
      IS TO BE SEARCHED";SF
                            :REM*26
1778 IFSF<ØORSF>FTHENPRINT"{3 CR
     SR UPs}":GOTO1776      :REM*66
178Ø PRINT"{COMD 6} ENTER {CTRL
     9}{CTRL 2}COMMON ITEM{COMD
     6}{CTRL Ø} ":PRINT" (THE EN
     TIRE STRING IS NOT REQUIRED
     )"                     :REM*6
1782 PRINT" {CTRL 9}";F$(SF);"{C
     TRL 8}{CTRL Ø} ";:INPUTT$
                            :REM*18
1784 PRINT"{SHFT CLR}":IFK=2THEN
     GOSUB1838:GOSUB1852:REM*2ØØ
1786 FORI=1TOX              :REM*248
1788 IFP<>4THENPRINT" {CRSR DN}S
     EARCHING RECORD";I;"{2 CRSR
      UPs}"{25 SPACEs}      :REM*196
179Ø FORN=1TOF:INPUT#5,REC$(N):I
     FREC$(N)=">"THENREC$(N)=" "
                            :REM*244
1791 NEXTN:GOSUB1618:IFET=8THEN1
```

→

THE BASEBALL DATABASE

LET YOUR COMPUTER KEEP TRACK OF YOUR TEAM'S BASEBALL STATS FOR YOU!

■ **EASY TO USE** • Menu driven • clear screen directions • detailed user's manual • easy data entry • fast stats retrieval

■ **COMPREHENSIVE** • 23 player and 22 pitching stats • inning box scores • totals, cums, averages, etc. calculated • up to 30 players • unlimited games

■ **DETAILED PRINTED REPORTS** • Player rosters • win/loss records • game summaries • player, pitching and team cums • player and pitcher histories • and a lot more

We offer a 15-day money back guarantee, so don't delay. Call us with your Visa/Mastercard order or send us the coupon below with your check or MO. Program specs and details are available upon request, if you would like more information.

__ BBDB for Commodore 64/128 @ $39.95 $_____
__ BBDB for Apple IIe/IIc @ $49.95 $_____
Shipping & Handling $ 2.50
☐ Visa ☐ MC ☐ Chk/MO Total $_____
No. _____ Exp. Date _____
Tele: (_____) _____ - _____
Name _____
Address _____
City _____ ST_____ ZIP_____

JACOBSEN SOFTWARE DESIGNS
Attn: Order - RN
1590 E. 43rd Ave., Eugene, Oregon 97405
Phone: (503) 343-8030

Circle 197 on Reader Service card.

COMMON STOCK ANALYSIS WITH YOUR COMPUTER
WALLSTREET MICROSCOPE

Available for: Commodore-64; Apple II+, II E, II C; IBM and Compatibles

- **Stocks Judged by 10 Criteria**
- **5 By Price (Cap Gains Potential)**
- **5 By Financial Stability (Safety)**
- **Criteria Values May Be Set By User**

Eight Computer Programs
Thorough Documentation
Comes Complete With
1500 Company Data Base
$135.00

(Updates Available By Subscription)

- **Search Capabilities**
- **Market Averages**
- **Single or Batch Processing**
- **Graphics**

DEMONSTRATION DISK—$10
($13—C.O.D.)
Advises when to buy and sell.

"As a Powerful Financial Planning Tool, Wallstreet Microscope is Top—Notch . . . Wallstreet Microscope Gives You Your Money's Worth And More—As a Reliable, Computerized Stock Manager and Forecaster."

(The Book of Commodore 64 Software 1985)

Make your computer aide you in either Bull or Bear Markets

WALLSTREET CORP.
Call: (402) 390-3372 (24 Hrs.) for C.O.D.
Write: 1527 South 93rd Avenue, Omaha, NE 68124

Circle 165 on Reader Service card.

Listing 1 continued.

```
    528                     :REM*191
1792 IFT$=LEFT$(REC$(SF),LEN(T$)
    )THENONKGOSUB1826,187Ø,1928
    :IFK=2THENGOSUB19Ø4 :REM*81
1796 NEXTI                  :REM*95
1797 IFL>ØANDK=3THENGOSUB1936
                            :REM*15Ø
1798 CLOSE5:CLOSE15         :REM*215
18ØØ IFK=2THEN19Ø6          :REM*253
18Ø1 IFP=4THENPRINT"{COMD 6}PRES
    S {CTRL 2}{CTRL 9}ANY KEY{C
    TRL 8}{CTRL Ø}":GOSUB1522
                            :REM*1Ø6
18Ø2 GOTO173Ø               :REM*167
18Ø4 REM-PRINT ALL          :REM*239
18Ø6 GOSUB2898:PL=Ø:PRINT"{SHFT
    CLR}{CTRL 8}":IFP<>4ANDK=2T
    HENPRINT"{SHFT CLR}{CRSR DN
    } PRINTING HEADING" :REM*79
18Ø7 IFK=2THENGOSUB1838:GOSUB185
    2                       :REM*72
18Ø8 FORI=STOX:IFP<>4THENPRINT"{
    CRSR UP} READING RECORD #"S
    TR$(I)" OF"STR$(X){4 SPACEs
    }                       :REM*85
181Ø FORN=1TOF:INPUT#5,REC$(N):I
    FREC$(N)=">"THENREC$(N)=" "
                            :REM*9
1811 NEXTN:GOSUB1618:IFET=8THEN1
    528                     :REM*212
1812 ONKGOSUB1826,187Ø,1928
                            :REM*145
1814 IFK=2THENGOSUB19Ø4 :REM*2Ø5
1816 NEXTI                  :REM*115
1818 CLOSE5:CLOSE15         :REM*235
182Ø IFK=2THEN19Ø6          :REM*17
1822 GOTO18Ø1               :REM*171
1824 REM-NONFORMATTED       :REM*2Ø5
1826 PRINT#PF,"[ RECORD #";I;"{3
     SPACEs}]";:FORJ=1TO61:PRIN
    T#PF,"-";:NEXTJ:GOSUB2888
                            :REM*93
1828 PL=PL+1:FORN=1TOF      :REM*45
183Ø PRINT#PF,F$(N);:FORJ=1TO2Ø-
    LEN(F$(N)):PRINT#PF,".";:NE
    XTJ                     :REM*35
1831 IFREC$(N)=">"THENREC$(N)="
    "                       :REM*74
1832 PRINT#PF,REC$(N):PL=PL+1:NE
    XTN:GOSUB2888:PL=PL+1
                            :REM*43
1834 IFPL+F<=6ØTHENRETURN
                            :REM*1Ø7
1835 FORJ=1TO65-PL:GOSUB2888:NEX
    TJ:PL=Ø:PG=PG+1:PRINT#PF,"P
    AGE"PG:RETURN           :REM*13Ø
1836 REM-TITLE              :REM*2Ø5
1838 FORJ=1TONL:IFTT$(J)<>">"THE
    NGOSUB1846{31 SPACEs}
                            :REM*33
1842 NEXTJ:RETURN           :REM*11
1846 B=INT((PW-LEN(TT$(J)))/2):I
    FP<>1THEN1849           :REM*17
1848 PRINT#PF,LEFT$(S$,B)+TT$(J)
    ;B1$;:PL=PL+1:RETURN
                            :REM*239
1849 PRINT#PF,LEFT$(S$,B)+TT$(J)
    ;B1$:PL=PL+1:RETURN:REM*232
185Ø REM-HEADINGS           :REM*37
1852 GOSUB1866:PC(NC+1)=PW+3:CW=
    PC(2)-2-PC(1):IFPC(1)>1THEN
    1856                    :REM*115
1854 PRINT#PF,LEFT$(HC$(1),CW);:
    GOTO1858                :REM*231
1856 PRINT#PF,LEFT$(S$,PC(1)-1)+
    LEFT$(HC$(1),CW);       :REM*227
1858 IFNC=1THEN1862         :REM*159
1859 FORJ=2TONC:M=PC(J)-LEN(LEFT
    $(HC$(J-1),PC(J)-2-PC(J-1))
    )-PC(J-1)               :REM*24Ø
186Ø PRINT#PF,LEFT$(S$,M)+LEFT$(
    HC$(J),PC(J+1)-2-PC(J));
                            :REM*129
1861 NEXTJ                  :REM*168
1862 GOSUB2888:GOSUB1866:PL=PL+3
    :RETURN                 :REM*47
1864 REM-DASHES             :REM*71
1866 FORJ=1TOPW:PRINT#PF,"-";:NE
    XTJ:GOSUB2888:RETURN:REM*69
1868 REM-DATA               :REM*29
187Ø F1=VAL(RP$(1,1)):F2=VAL(RP$
    (1,2)):F3=VAL(RP$(1,3)):CW=
    PC(2)-2-PC(1)           :REM*83
1871 IFNC=1ANDZ=1THENCLM$=REC$(V
    AL(RP$(1,1))):GOSUB3148:GOT
    O1896                   :REM*158
1872 IFPC(1)>1THEN1878      :REM*213
1874 PRINT#PF,LEFT$(REC$(F1)+B$+
    REC$(F2)+B$+REC$(F3),CW);
                            :REM*67
1876 GOTO1882               :REM*35
1878 PRINT#PF,LEFT$(S$,PC(1)-1);
                            :REM*229
188Ø PRINT#PF,LEFT$(REC$(F1)+B$+
    REC$(F2)+B$+REC$(F3),CW);
                            :REM*73
1882 IFNC=1THEN1896         :REM*227
1883 FORJ=2TONC:CW=PC(J)-2-PC(J-
    1)                      :REM*76
1884 F1=VAL(RP$(J-1,1)):F2=VAL(R
    P$(J-1,2)):F3=VAL(RP$(J-1,3
    ))                      :REM*83
1886 M=LEN(LEFT$(REC$(F1)+B$+REC
    $(F2)+B$+REC$(F3),CW))
                            :REM*1Ø9
1888 M=PC(J)-M-PC(J-1):CW=PC(J+1
    )-2-PC(J)               :REM*179
189Ø PRINT#PF,LEFT$(S$,M);
                            :REM*45
1891 IFJ=NCANDZ=1THENCLM$=REC$(V
    AL(RP$(J,1))):GOSUB3148:GOT
    O1896                   :REM*18
1892 F1=VAL(RP$(J,1)):F2=VAL(RP$
    (J,2)):F3=VAL(RP$(J,3)){18
    SPACEs}                 :REM*191
1894 PRINT#PF,LEFT$(REC$(F1)+B$+
    REC$(F2)+B$+REC$(F3),CW);
                            :REM*87
1895 NEXTJ                  :REM*2Ø2
1896 GOSUB2888:PL=PL+1      :REM*137
1898 IFPL=6ØTHENFORJ=1TO5:GOSUB2
    888:NEXTJ:PL=Ø:GOTO19Ø1{18
    SPACEs}                 :REM*2Ø5
19ØØ RETURN                 :REM*173
19Ø1 PG=PG+1:PRINT#PF,"PAGE"PG:G
    OSUB1852:RETURN         :REM*42
19Ø2 REM-SUM                :REM*81
19Ø4 IFZ<>1THENRETURN       :REM*151
19Ø5 AØ=AØ+VAL(REC$(VAL(RP$(NC,1
    )))):RETURN{3Ø SPACEs}
                            :REM*54
19Ø6 IFZ<>1THEN1914         :REM*21
19Ø8 PRINT#PF,LEFT$(S$,PC(NC)-1)
    ;                       :REM*17
191Ø FORI=1TOPW-PC(NC)+1:PRINT#P
    F,"-";:NEXTI:GOSUB2888
                            :REM*235
1911 IFNC=1THEN1913         :REM*2Ø2
1912 PRINT#PF,LEFT$(S$,PC(NC)-9)
    +"TOTAL={2 SPACEs}";:REM*75
1913 CLM$=STR$(AØ):GOSUB3148:PL=
    PL+2                    :REM*52
1914 GOSUB2888:IFPF=4THENFORI=1T
    O66-PL:GOSUB2888:NEXTI
                            :REM*11
1915 GOTO18Ø1                :REM*8
1916 REM-TEST               :REM*23
1918 PRINT"{CRSR DN} PRINTING TE
    ST LABEL"               :REM*191
192Ø FORI=1TORW:FORJ=1TOLW:PRINT
    #PF,RIGHT$(STR$(J),1);:NEXT
    J:GOSUB2888:NEXTI       :REM*63
1922 FORI=1TOT%-RW:GOSUB2888:NEX
    TI                      :REM*55
1924 GOTO1742               :REM*193
1926 REM-LABELS             :REM*69
1928 L=L+1:FORJ=1TORW:F1=VAL(ML$
    (J,1)):F2=VAL(ML$(J,2)):F3=
    VAL(ML$(J,3))           :REM*135
193Ø RW$(J)=RW$(J)+LEFT$(REC$(F1
    )+B$+REC$(F2)+B$+REC$(F3)+S
    $,LW)+B$+B$:NEXTJ       :REM*59
1932 IFI>=XTHEN1936         :REM*137
1934 IFL<>LTTHENRETURN      :REM*155
1936 FORJ=1TORW:PRINT#PF,LEFT$(R
    W$(J),LP(LT)+LW-1):RW$(J)="
    ":NEXTJ                 :REM*185
1937 FORS=1TOT%-RW:GOSUB2888:NEX
    TS:L=Ø:RETURN           :REM*2Ø4
1938 REM-LABEL SIZE         :REM*157
194Ø PRINT"{SHFT CLR}{CTRL 8} {C
    TRL 9}{13 SPACEs}LABEL SIZE
    {15 SPACEs}{CTRL Ø}"
                            :REM*235
1941 PRINT"{COMD 6} {CTRL 9}CURR
    ENTLY:{CTRL 8}"RW"{COMD 6}{
    CRSR LF} ROWS,{CTRL 8}"LW"{
    COMD 6}{CRSR LF} CHRS,{CTRL
     8}"LT"{COMD 6}{CRSR LF} AC
    ROSS {CTRL 8}"          :REM*5Ø
1942 PRINTTAB(3)"{CRSR DN}{CTRL
    9}{CTRL 2}S{COMD 6}{CTRL Ø}
    TANDARD - 5 ROWS, 34 CHRS,
    1 UP"                   :REM*95
1944 PRINTTAB(5)"15/16 INCH BY 3
     1/2 INCHES"            :REM*131
1946 PRINTTAB(3)"{CRSR DN}{CTRL
    9}{CTRL 2}L{COMD 6}{CTRL Ø}
    ARGE{4 SPACEs}- 8 ROWS, 34
    CHRS, 1 UP"             :REM*253
1948 PRINTTAB(5)"1 7/16 INCH BY
    3 1/2 INCHES"           :REM*115
195Ø PRINTTAB(3)"{CRSR DN}{CTRL
    9}{CTRL 2}C{COMD 6}{CTRL Ø}
    HANGE LABEL SIZE AND TYPE"
                            :REM*33
1953 PRINTTAB(3)"{2 CRSR DNs}{CT
    RL 9}{CTRL 2}E{COMD 6}{CTRL
     Ø}XIT"                 :REM*72
1954 PRINT"{2 CRSR DNs} NOTE: LA
    BELS ARE SEPARATED BY ONE R
    OW"                     :REM*217
1956 PRINTTAB(7)"AND 2 CHARACTER
    S"                      :REM*253
1958 GOSUB1521              :REM*83
196Ø GOSUB1522:IFA$="E"THEN1584
                            :REM*43
1962 IFA$="S"THENT%=6:RW=5:LW=34
    :GOTO194Ø               :REM*33
1964 IFA$="L"THENT%=9:RW=8:LW=34
    :GOTO194Ø               :REM*13
1966 IFA$="C"THEN1968       :REM*27
1967 GOSUB6Ø2:GOTO196Ø      :REM*56
1968 PRINT"{COMD 6}{CRSR DN} NUM
    BER OF ROWS ON LABEL{CTRL 8
    }?"RW                   :REM*1Ø9
1969 PRINT"{CRSR UP}"TAB(24);:IN
    PUTRW:T%=RW+1           :REM*124
197Ø PRINT"{COMD 6} # OF CHARACT
    ERS PER ROW{CTRL 8}?"LW
                            :REM*253
1971 PRINT"{CRSR UP}"TAB(24);:IN
    PUTLW                   :REM*142
1972 PRINT"{COMD 6} # LABELS ACR
    OSS PAGE{3 SPACEs}{CTRL 8}?
    "LT                     :REM*47
1973 PRINT"{CRSR UP}"TAB(24);:IN
    PUTLT:IFLT<1ORLT>4THENPRINT
    "{CRSR UP}":GOTO1973{8 SPAC
    Es}                     :REM*166
1974 LP(1)=1:LP(2)=LW+2:LP(3)=2*
    (LW+2):LP(4)=3*(LW+2){2Ø SP
    ACEs}                   :REM*117
1975 GOTO194Ø               :REM*148
1976 REM-PRINTER CMDS       :REM*163
1978 PRINT"{CTRL 8}{SHFT CLR} {C
    TRL 9}{11 SPACEs}PRINTER CO
```

```
    MMAND{12 SPACEs}{CTRL Ø}"
                          :REM*65
198Ø PRINT"{COMD 6}{CRSR DN} THI
    S ROUTINE WILL SEND CHARACT
    ER"                   :REM*223
1982 PRINT" STRING [CHR$()] COMM
    ANDS TO AN ASCII"     :REM*177
1984 PRINT" PRINTER.{2 SPACEs}CO
    MMANDS MUST BE ENTERED IN"
                          :REM*123
1986 PRINT" THE FORM OF INTEGERS
     SUCH AS:"            :REM*213
1988 PRINT"{CRSR DN}{CTRL 8} ? 2
    7{COMD 6}{5 SPACEs}(CODE 1)
    "                     :REM*13
199Ø PRINT"{CTRL 8} ? 66{COMD 6}
    {5 SPACEs}(CODE 2)":REM*227
1992 PRINT"{CTRL 8} ? 2{COMD 6}{
    6 SPACEs}(CODE 3)"    :REM*3
1994 PRINT"{CTRL 8} ? *{COMD 6}{
    6 SPACEs}(END)"       :REM*249
1996 PRINT"{CRSR DN} THIS WILL B
    E SENT TO THE PRINTER AS:"
                          :REM*247
1998 PRINT"{CRSR DN}{CTRL 8}{3 S
    PACEs}PRINT#4,CHR$(27)CHR$(
    66)CHR$(2){COMD 6}":REM*197
2ØØØ PRINT"{CRSR DN} UP TO FOUR(
    4) NUMBERS MAY BE SENT,"
                          :REM*225
2ØØ2 PRINT" THE FIRST NORMALLY B
    EING {CTRL 8}{CTRL 9}27{CTR
    L Ø}{COMD 6}, THE" :REM*155
2ØØ4 PRINT" ESCAPE CHARACTER.{2
    SPACEs}END THE SEQUENCE"
                          :REM*149
2ØØ6 PRINT" BY PRESSING {CTRL 2}
    {CTRL 9}RETURN{COMD 6}{CTRL
     Ø} WHEN THE ASTERISK"
                          :REM*73
2ØØ8 PRINT" IS SHOWING.{2 SPACEs
    }PRINTERS WILL VARY, SO"
                          :REM*153
2Ø1Ø PRINT" CHECK YOUR MANUAL FO
    R THE CODES."         :REM*245
2Ø12 PRINT"{CRSR DN}{4 SPACEs}{C
    TRL 2}{CTRL 9}ANY KEY{CTRL
    Ø}{COMD 6} TO CONTINUE OR {
    CTRL 2}{CTRL 9}E{COMD 6}{CT
    RL Ø}XIT?"            :REM*81
2Ø14 GOSUB1522:IFA$="E"THEN1584
                          :REM*97
2Ø16 PRINT"{CTRL 8}{SHFT CLR} {C
    TRL 9}{8 SPACEs}SEND PRINTE
    R COMMAND{1Ø SPACEs}{CTRL Ø
    }"                    :REM*181
2Ø18 PRINT"{CRSR DN}{COMD 6} ENT
    ER CODE, THEN PRESS {CTRL 2
    }{CTRL 9}RETURN{CTRL Ø}{COM
    D 6}"                 :REM*99
2Ø2Ø PRINT"{CRSR DN} {CTRL 2}{CT
    RL 9}RETURN{COMD 6}{CTRL Ø}
     ONLY TO QUIT{2 CRSR DNs}{C
    TRL 8}"               :REM*111
2Ø22 FORI=1TO4:PRINT"{COMD 6}COD
    E{CTRL 8}";I;" ? * {4 CRSR
    LFs}";:INPUTI$(I)     :REM*69
2Ø24 IFI$(I)="*"THEN2Ø28 :REM*99
2Ø26 NEXTI                :REM*69
2Ø28 ON(I-1)GOTO2Ø3Ø,2Ø32,2Ø34,2
    Ø36:GOTO2Ø39          :REM*115
2Ø3Ø PRINT#4,CHR$(VAL(I$(1))):GO
    TO2Ø38                :REM*23
2Ø32 PRINT#4,CHR$(VAL(I$(1)))CHR
    $(VAL(I$(2))):GOTO2Ø38
                          :REM*161
2Ø34 PRINT#4,CHR$(VAL(I$(1)))CHR
    $(VAL(I$(2)))CHR$(VAL(I$(3)
    )):GOTO2Ø38           :REM*239
2Ø36 PRINT#4,CHR$(VAL(I$(1)))CHR
    $(VAL(I$(2)))CHR$(VAL(I$(3)
    ))CHR$(VAL(I$(4))) :REM*243
2Ø38 GOSUB2888            :REM*95
2Ø39 PRINTTAB(1Ø)"{2 CRSR DNs}{C
    TRL 9}{CTRL 2}A{COMD 6}{CTR
    L Ø}NOTHER CODE"      :REM*236
2Ø4Ø PRINTTAB(1Ø)"{CRSR DN}{CTRL
     9}{CTRL 2}T{COMD 6}{CTRL Ø
    }EST CHANGE"          :REM*37
2Ø42 PRINTTAB(1Ø)"{CRSR DN}{CTRL
     9}{CTRL 2}E{COMD 6}{CTRL Ø
    }XIT TO START"        :REM*25
2Ø44 GOSUB1521            :REM*169
2Ø46 GOSUB1522:IFA$="A"THEN2Ø16
                          :REM*235
2Ø48 IFA$="T"THENPRINT#4,"ABCDEF
    GHIJKLMNOPQRSTUVWXYZ":GOSUB
    2888:GOTO2Ø46         :REM*94
2Ø5Ø IFA$="E"THENRETURN :REM*176
2Ø52 GOSUB6Ø2:GOTO2Ø46  :REM*164
2854 REM-SETUP            :REM*199
2856 PRINT"{CTRL 8}{SHFT CLR} {C
    TRL 9}{4 SPACEs}PRINTER OR
    INTERFACE CONFIGURE{4 SPACE
    s}"                   :REM*193
2857 IFP<>ØTHENPRINT"{COMD 6}{CR
    SR DN} CURRENT OPTION IS:{C
    TRL 8}"P              :REM*144
2858 PRINT"{CRSR DN} {COMD 6}PRE
    SS {CTRL 9}{CTRL 2}1{COMD 6
    }{CTRL Ø}{2 SPACEs}CARDCO A
    , 1525"               :REM*195
286Ø PRINTTAB(7)"{CTRL 9}{CTRL 2
    }2{COMD 6}{CTRL Ø}{2 SPACEs
    }PRINTERS W/ GRAPHIC INTERF
    ACE"                  :REM*219
```

→

Copy Worldwide Short-wave Radio Signals on Your Computer

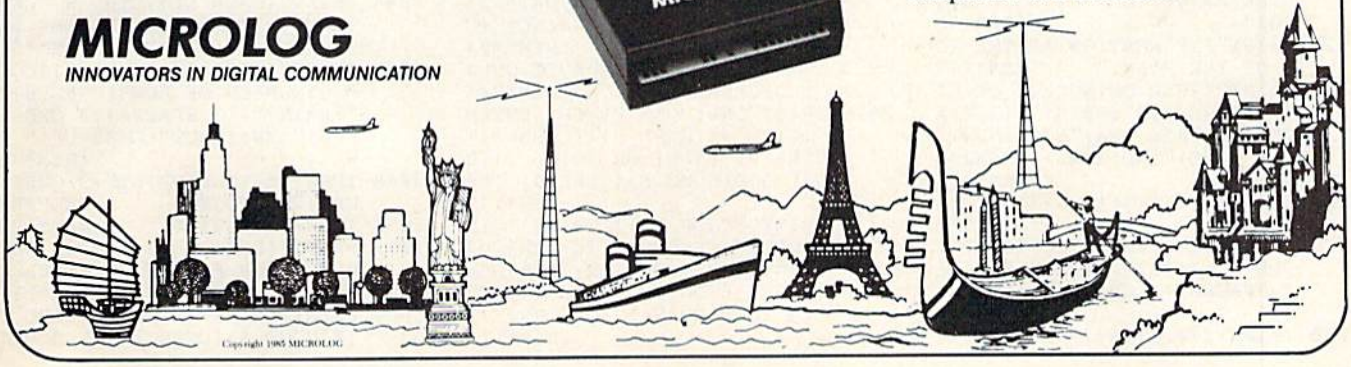
Remember the fun of tuning in all those foreign broadcast stations on the short-wave radio? Remember those mysterious sounding coded tone signals that baffled you? Well, most of those beeps & squeals are really digital data transmissions using radioteletype or Morse code. The signals are coming in from weather stations, news services, ships & ham radio operators all over the world. Our short-wave listener cartridge, the "SWL", will bring that data from your radio right to the video screen. You'll see the actual text as it's being sent from those far away transmitters.

The "SWL" contains the program in ROM as well as radio interface circuit to copy Morse code and all speeds/shifts of radioteletype. It comes with a cable to connect to your radio's speaker/earphone jack, demo cassette, and an excellent manual that contains a wealth of information on how to get the most out of short-wave digital DXing, even if you're brand new at it.

For about the price of another "Pac-Zapper" game, you can tie your Commodore 64, 128 or VIC-20 into the exciting world of digital communications with the Micrologg SWL. $64. Postpaid, U.S.

MICROLOG CORPORATION,
18713 Mooney Drive,
Gaithersburg, Maryland 20879.
Telephone: 301 258-8400.

MICROLOG
INNOVATORS IN DIGITAL COMMUNICATION



Circle 91 on Reader Service card.

Listing 1 continued.

```
2862 PRINTTAB(7)"{CTRL 9}{CTRL 2
     }3{COMD 6}{CTRL Ø}{2 SPACEs
     }1526, MPS8Ø1/8Ø2/8Ø3"
                          :REM*185
2863 PRINTTAB(7)"{CTRL 9}{CTRL 2
     }4{COMD 6}{CTRL Ø}{2 SPACEs
     }PRINT TO SCREEN"    :REM*2
2864 IFP<>ØTHENPRINT"{2 CRSR DNs
     }{3 SPACEs}OR{2 SPACEs}{CTR
     L 9}{CTRL 2}S{COMD 6}{CTRL
     Ø}END PRINTER COMMANDS"
                          :REM*87
2866 IFP<>ØTHENPRINTTAB(7)"{2 CR
     SR DNs}{CTRL 9}{CTRL 2}E{CO
     MD 6}{CTRL Ø}XIT TO CONTINU
     E"                   :REM*93
2868 GOSUB1521            :REM*229
287Ø GOSUB1522            :REM*39
2872 IFA$="E"THENRETURN :REM*233
2874 IFA$="S"THENGOTO1978
                          :REM*241
2876 P=VAL(A$):PF=4       :REM*167
2878 IFP=1THENB1$=CHR$(1Ø):GOTO2
     856                  :REM*19
288Ø IFP=2THENB1$=CHR$(Ø):GOTO28
     56                   :REM*199
2882 IFP=3THENB1$=CHR$(Ø):GOTO28
     56                   :REM*233
2883 IFP=4THENB1$=CHR$(Ø):PF=3:G
     OTO2856              :REM*142
2884 GOSUB6Ø2:GOTO287Ø    :REM*211
2886 REM-TERMINATOR       :REM*237
2888 ONPGOTO289Ø,2892,2894,2892
                          :REM*37
289Ø PRINT#PF,B1$;:RETURN:REM*65
2892 PRINT#PF,B1$:RETURN :REM*31
2894 PRINT#PF:RETURN      :REM*141
2896 REM-JUMP TO          :REM*191
2898 INPUT"{SHFT CLR}{COMD 6}{CR
     SR DN} START AT RECORD{CTRL
      8}? 1{3 CRSR LFs}";S:IFS>X
      OR S<1THEN2898      :REM*165
29ØØ IFS=1THENRETURN      :REM*171
29Ø2 FORI=1TOS-1:PRINT"{CRSR UP}
      BYPASSING RECORD #"STR$(I)
     " OF"STR$(X)         :REM*15
29Ø4 FORN=1TOF:INPUT#5,REC$(N):N
     EXTN:GOSUB1618:IFET=8THEN15
     28                   :REM*2Ø5
29Ø6 NEXTI:RETURN         :REM*47
29Ø8 REM-REPORT           :REM*147
291Ø PRINT"{COMD 6}{SHFT CLR}{CR
     SR DN}{CTRL 9}REPORT SIZE{C
     TRL Ø} UP TO 136 CHARACTER
     WIDE."               :REM*93
2912 PRINT"{CRSR DN}MODIFY PRINT
     ER FOR WIDTHS > 8Ø CHRS."
                          :REM*173
2918 PRINT"{CRSR DN}NUMBER OF CH
     ARACTERS{CTRL 8}?":PRINT"?{
     3 SPACEs}{3 CRSR LFs}";PW:I
     NPUT"{CRSR UP}";PW   :REM*65
292Ø IFPW>136THEN2918     :REM*233
2922 PRINT"{SHFT CLR}{CRSR DN}{C
     TRL 9}{COMD 6}TITLE FORMAT{
     CTRL Ø} UP TO 4 TITLE LINES
      OF"                 :REM*93
2924 PRINT"INFORMATION AT THE TO
     P OF THE FORM."      :REM*187
2926 PRINT"{CRSR DN}NUMBER OF LI
     NES{CTRL 8}?":PRINT"?{3 SPA
     CEs}{3 CRSR LFs}";NL:INPUT"
     {CRSR UP}";NL:IFNL>4THEN292
     6                    :REM*173
2927 IFNL=ØTHENTT$(1)=">":GOTO29
     36                   :REM*196
2928 FORJ=1TONL:PRINT"{COMD 6}TI
     TLE #";J:PRINT"{CTRL 8}? >{
     2 SPACEs}{3 CRSR LFs}";TT$(
     J)                   :REM*85
293Ø IFLEN(TT$(J))>37THENPRINT"{
     CRSR UP}";           :REM*181
2932 INPUT"{CRSR UP}";TT$(J):IFT
     T$(J)=""THENTT$(J)=">"
                          :REM*219
2933 TT$(J)=LEFT$(TT$(J),PW)
                          :REM*114
2934 NEXTJ                :REM*221
2936 PRINT"{SHFT CLR}{CTRL 9}{CO
     MD 6}COLUMN FORMAT{CTRL Ø}
     UP TO 16 COLUMNS WITH 2"
                          :REM*61
2937 PRINT"SPACES BETWEEN COLUMN
     S"                   :REM*116
2938 PRINT"{CRSR DN}NUMBER OF CO
     LUMNS{CTRL 8}?":PRINT"?{3 S
     PACEs}{3 CRSR LFs}";NC:INPU
     T"{CRSR UP}";NC:IFNC>16THEN
     2938                 :REM*45
294Ø FORJ=1TONC:PRINT"{COMD 6}PO
     SITION OF COLUMN #";J:PRINT
     "{CTRL 8}?{3 SPACEs}{3 CRSR
      LFs}";PC(J)         :REM*135
2942 INPUT"{CRSR UP}";PC(J):NEXT
     J                    :REM*147
2944 PRINT"{SHFT CLR}{CTRL 9}{CO
     MD 6}HEADING FORMAT{CTRL Ø}
      COLUMN HEADINGS CANNOT"
                          :REM*229
2946 PRINT"EXCEED WIDTH OF COLUM
     NS:{CRSR DN}"        :REM*75
2948 FORJ=1TONC:PRINT"{COMD 6}CO
     LUMN{CTRL 8}";J;"{COMD 6} H
     EADING{CTRL 8}";     :REM*245
295Ø IFJ=NCTHENPRINTPW-PC(J);:GO
     TO2954               :REM*199
2952 PRINTPC(J+1)-2-PC(J);
                          :REM*145
2954 PRINT"{COMD 6} CHARACTERS W
     IDE"                 :REM*127
2956 PRINT"{CTRL 8}? >{2 SPACEs}
     {3 CRSR LFs}";HC$(J):INPUT"
     {CRSR UP}";HC$(J):IFHC$(J)=
     ""THENHC$(J)=">"     :REM*129
2958 NEXTJ                :REM*245
296Ø PRINT"{SHFT CLR}{COMD 6}CHO
     OSE WHICH FIELDS GO UNDER T
     HE COLUMNS"          :REM*99
2962 PRINT"{CRSR UP}ENTER {CTRL
     2}{CTRL 9}Ø{COMD 6}{CTRL Ø}
      IF ADDITIONAL FIELDS ARE":
     PRINT"NOT DESIRED.{CRSR DN}
     "                    :REM*5
2964 FORN=1TOF:PRINT"{CTRL 9}{CT
     RL 2}";N;"{CTRL Ø}{COMD 6}
     ";F$(N):NEXTN        :REM*21
2966 FORJ=1TONC:PRINT"{HOME}{4 C
     RSR DNs}";TAB(25)"{COMD 6}C
     OLUMN{CTRL 8}";J;"{2 CRSR D
     Ns}"                 :REM*77
2968 FORL=1TO3:PRINTTAB(25)"{CRS
     R UP}{COMD 6}FIELD{CTRL 8}"
     ;L;" Ø {2 CRSR LFs}";RP$(J,
     L)                   :REM*39
297Ø PRINTTAB(32);"{CRSR UP}";:I
     NPUTRP$(J,L):NEXTL:NEXTJ
                          :REM*25
2972 PRINT"{SHFT CLR}{COMD 6}DO
     YOU WISH TO SUM THE DATA IN
      COLUMN{CTRL 8}"STR$(NC)"{C
     OMD 6}?"             :REM*1Ø3
2974 PRINT"THIS COLUMN MUST ONLY
      BE FORMATTED WITH":REM*245
2976 PRINT"ONLY ONE FIELD. ENTER
      {CTRL 2}{CTRL 9}1{COMD 6}{
     CTRL Ø} (YES) OR {CTRL 2}{C
     TRL 9}Ø{COMD 6}{CTRL Ø} (NØ
     )"                   :REM*149
2978 PRINT"{CRSR DN}{CTRL 8}?";Z
     :INPUT"{CRSR UP}";Z:REM*197
298Ø PRINT"{SHFT CLR}{2 CRSR DNs
     }{COMD 6}DO YOU WISH TO REV
     IEW YOUR FORMAT AND/OR"
                          :REM*117
2982 PRINT"MAKE CORRECTIONS?{2 S
     PACEs}PRESS {CTRL 9}{CTRL 2
     }Y{COMD 6}{CTRL Ø} OR {CTRL
      9}{CTRL 2}N{CTRL 8}{CTRL Ø
     }"                   :REM*131
2984 GOSUB1522            :REM*153
2986 IFA$="Y"THEN291Ø     :REM*215
2988 IFA$="N"THEN2994     :REM*85
299Ø GOTO2984             :REM*27
2992 REM-SAVE REPORT      :REM*65
2994 FL=2:PRINT"{CRSR DN}{COMD 6
     } {CTRL 9}SAVE REPORT FORMA
     T{CTRL Ø}?{5 SPACEs}{CTRL 9
     }{CTRL 2}Y{COMD 6}{CTRL Ø}
     OR {CTRL 9}{CTRL 2}N{CTRL 8
     }{CTRL Ø}"           :REM*67
2996 GOSUB1522            :REM*165
2998 IFA$="N"THEN3118     :REM*37
3ØØØ IFA$="Y"THEN3ØØ4     :REM*17
3ØØ2 GOTO2996             :REM*199
3ØØ4 PRINT"{CRSR DN}{COMD 6}SAVE
      UNDER WHAT FILE NAME{CTRL
     8}?":IFRF$=D$ORRF$=""THENRF
     $=NF$                :REM*143
3ØØ6 PRINT"{CRSR DN}{2 SPACEs}";
     RF$:INPUT"{CRSR UP}";RF$:IF
     RF$=""THEN3118       :REM*97
3ØØ8 OPEN15,8,15:PRINT#15,"SØ:RP
     ] "+RF$:GOSUB1618:IFET=8THE
     N3118                :REM*159
3Ø1Ø OPEN5,8,5,"Ø:RP] "+RF$+",S,
     W":GOSUB1618:IFET=8THEN3118
                          :REM*111
3Ø12 PRINT#5,PW;CR$;NL;CR$;NC:GO
     SUB1618:IFET=8THEN3118
                          :REM*2Ø7
3Ø14 FORJ=1TONL:IFTT$(J)=""THENT
     T$(J)=">"            :REM*21
3Ø16 PRINT#5,TT$(J):GOSUB1618:IF
     ET=8THEN3118         :REM*71
3Ø18 NEXTJ                :REM*49
3Ø2Ø FORI=1TONC           :REM*15
3Ø22 PRINT#5,PC(I);CR$;HC$(I):GO
     SUB1618:IFET=8THEN3118
                          :REM*51
3Ø24 FORN=1TO3            :REM*1Ø5
3Ø26 PRINT#5,RP$(I,N):GOSUB1618:
     IFET=8THEN3118       :REM*225
3Ø28 NEXTN:NEXTI:PRINT#5,STR$(Z)
     ;CR$;E$:GOSUB1618:IFET=8THE
     N3118                :REM*35
3Ø3Ø CLOSE5:CLOSE15:GOTO3118
                          :REM*1Ø7
3Ø32 REM-LABELS           :REM*155
3Ø34 PRINT"{CTRL 8}{SHFT CLR} {C
     TRL 9}{13 SPACEs}LABEL FORM
     AT{13 SPACEs}"       :REM*17
3Ø36 PRINT"{CRSR DN}{COMD 6}THIS
      FORMAT USES 1 TO 4 ACROSS
     LABELS.              :REM*75
3Ø38 PRINT"EACH LABEL CONTAINS U
     P TO{CTRL 8}"T%-1"{COMD 6}
     ROWS.                :REM*41
3Ø4Ø PRINT"EACH ROW CAN CONSIST
     OF 1 TO 3 FIELDS.    :REM*47
3Ø42 PRINT"IF THE LENGTH OF MULT
     IPLE ITEMS EXCEEDS   :REM*93
3Ø44 PRINT"{CRSR LF}{CTRL 8}"LW"
     {COMD 6}CHARACTERS, SOME DA
     TA WILL BE CUTOFF"   :REM*51
3Ø46 PRINT"{CRSR DN}{CTRL 9}{COM
     D 6}NUMBER OF ROWS{CTRL 8}?
     ":PRINT"?{3 SPACEs}{3 CRSR
     LFs}";RW:INPUT"{CRSR UP}";R
     W                    :REM*89
3Ø48 IFRW>T%-1THENPRINT"{3 CRSR
     UPs}":GOTO3Ø46       :REM*1Ø9
3Ø5Ø IFRW=ØTHEN3118       :REM*125
3Ø52 PRINT"{SHFT CLR}{COMD 6}CHO
     OSE WHICH FIELDS GO IN EACH
      ROW"                :REM*211
3Ø54 PRINT"ENTER {CTRL 2}{CTRL 9
     }Ø{COMD 6}{CTRL Ø} IF ADDIT
```

```
      IONAL FIELDS ARE":PRINT"NOT
       DESIRED.{CRSR DN}":REM*219
3056 FORN=1TOF:PRINT"{CTRL 2}{CT
     RL 9}";N;"{COMD 6}{CTRL Ø}
     ";F$(N):NEXTN          :REM*191
3058 FOR J=1TORW:PRINT"{HOME}{4
     CRSR DNs}";TAB(25)"{COMD 6}
     ROW{CTRL 8}";J;"{2 CRSR DNs
     }"                     :REM*171
3060 FORL=1TO3:PRINTTAB(25)"{CRS
     R UP}{COMD 6}FIELD{CTRL 8}"
     ;L;" Ø {2 CRSR LFs}";ML$(J,
     L)                     :REM*25
3062 PRINTTAB(32);"{CRSR UP}";:I
     NPUTML$(J,L)           :REM*71
3064 NEXTL                  :REM*111
3066 NEXTJ                  :REM*97
3068 PRINT"{SHFT CLR}{2 CRSR DNs
     }{COMD 6}DO YOU WISH TO REV
     IEW YOUR FORMAT AND/OR"
                            :REM*205
3070 PRINT"MAKE CORRECTIONS?{2 S
     PACEs}PRESS {CTRL 2}{CTRL 9
     }Y{CTRL Ø}{COMD 6} OR {CTRL
      2}{CTRL 9}N{CTRL 8}{CTRL Ø
     }"                     :REM*199
3072 GOSUB1522              :REM*242
3074 IFA$="Y"THEN3034       :REM*140
3076 IFA$="N"THEN3082        :REM*26
3078 GOTO3072               :REM*72
3080 REM-SAVE LABEL         :REM*24
3082 FL=3:PRINT"{CRSR DN}{CTRL 9
     }{COMD 6}SAVE LABEL FORMAT{
     CTRL Ø}?{7 SPACEs}{CTRL 9}{
     CTRL 2}Y{COMD 6}{CTRL Ø} OR
      {CTRL 2}{CTRL 9}N{CTRL 8}{
     CTRL Ø}"               :REM*96
3084 GOSUB1522              :REM*254
3086 IFA$="N"THEN3118       :REM*126
3088 IFA$="Y"THEN3092       :REM*186
3090 GOTO3084               :REM*248
3092 PRINT"{CRSR DN}{COMD 6}SAVE
      UNDER WHAT FILE NAME{CTRL
     8}?":IFMF$=D$ORMF$=""THENMF
     $=NF$                  :REM*90
3094 PRINT"{CRSR DN}{2 SPACEs}";
     MF$:INPUT"{CRSR UP}";MF$:IF
     MF$=""THEN3118         :REM*24
3096 OPEN15,8,15:PRINT#15,"S0:ML
     ] "+MF$:GOSUB1618:IFET=8THE
     N3118                  :REM*132
3098 OPEN5,8,5,"Ø:ML] "+MF$+",S,
     W":GOSUB1618:IFET=8THEN3118
                            :REM*226
3100 PRINT#5,RW             :REM*22
3102 FORI=1TORW:FORN=1TO3
                            :REM*122
3104 PRINT#5,ML$(I,N):GOSUB1618:
     IFET=8THEN3118         :REM*144
3106 NEXTN:NEXTI            :REM*240
3110 PRINT#5,"EOF":GOSUB1618:IFE
     T=8THEN3118            :REM*148
3112 CLOSE5:CLOSE15         :REM*254
3116 REM-PRINT OPTIONS      :REM*60
3118 PRINT"{CTRL 8}{SHFT CLR} {C
     TRL 9}{9 SPACEs}PRINT OPTIO
     NS MENU{9 SPACEs}"     :REM*130
3119 PRINT"{COMD 6}{CRSR DN} CUR
     RENT RECORD FILE: {CTRL 8}{
     CTRL 9}"NF$            :REM*107
3120 PRINT"{COMD 6} CURRENT FORM
     AT FILE: {CTRL 8}{CTRL 9}";
     :IFK=2THENPRINTRF$;:GOTO312
     2                      :REM*214
3121 IFK=3THENPRINTMF$;     :REM*81
3122 PRINT:PRINTTAB(7)"{CRSR DN}
     {CTRL 9}{CTRL 2}L{COMD 6}{C
     TRL Ø}OAD OLD FORMAT"
                            :REM*216
3123 PRINTTAB(7)"{CRSR DN}{CTRL
     9}{CTRL 2}C{COMD 6}{CTRL Ø}
     REATE/CHANGE FORMAT"
                            :REM*231
3124 PRINTTAB(7)"{CRSR DN}{CTRL
     9}{CTRL 2}S{COMD 6}{CTRL Ø}
     AVE CURRENT FORMAT":REM*232
3125 PRINTTAB(7)"{CRSR DN}{CTRL
     9}{CTRL 2}P{COMD 6}{CTRL Ø}
     RINT RECORDS"          :REM*251
3126 PRINTTAB(7)"{CRSR DN}{CTRL
     9}{CTRL 2}${COMD 6}{CTRL Ø}
      DISK DIRECTORY {CTRL 9}{CT
     RL 2}4{COMD 6}{CTRL Ø}"
                            :REM*24
3128 PRINTTAB(7)"{CRSR DN}{CTRL
     9}{CTRL 2}E{COMD 6}{CTRL Ø}
     XIT"                   :REM*68
3130 GOSUB1521              :REM*236
3132 GOSUB1522              :REM*46
3134 IFA$="L"THENONKGOTO3132,166
     8,1704                 :REM*54
3136 IFA$="S"THENONKGOTO3132,300
     4,3092                 :REM*182
3138 IFA$="C"THENONKGOTO3132,291
     Ø,3034                 :REM*128
3140 IFA$="4"ORA$="$"THENGOSUB16
     28:GOTO3118            :REM*206
3141 IFA$="P"THEN1730       :REM*251
3142 IFA$="E"THEN1584        :REM*54
3144 GOSUB6Ø2:GOTO3132      :REM*204
3146 REM-RIGHT JUSTIFY      :REM*202
3148 D=2:CLM$=STR$(INT(VAL(CLM$)
     *10{UP ARROW}2+.5)):REM*148
3150 IFLEFT$(CLM$,1)=" "THENCLM$
     =MID$(CLM$,D)          :REM*118
3152 IFD>LEN(CLM$)THENCLM$=RIGHT
     $("ØØØØØØØØ"+CLM$,D):REM*48
3154 IFDTHENCLM$=LEFT$(CLM$,LEN(
     CLM$)-D)+"."+RIGHT$(CLM$,D)
                            :REM*6
3156 IFLEN(CLM$)<CWTHENCLM$=RIGH
     T$(S$+CLM$,CW)         :REM*208
3158 IFLEN(CLM$)>CWTHENCLM$=LEFT
     $(CLM$,CW)             :REM*40
3160 PRINT#PF,CLM$;:RETURN
                            :REM*100
```

■

NEW

Hot Shot™

Graphics Printer Interface
with optional 8K buffer

The Hot Shot Graphics Printer Interface gives you the ultimate in printer performance and speed at a price well below other interfaces. The light weight Hot Shot plugs directly to the back of your printer, and its cable then plugs into your computer or disk drive. The Hot Shot supports dozens of popular printer models giving 100% compatibility with software designed for standard Commodore printers. It comes standard with an internal graphics buffer which gives super graphics compatibility, virtually eliminating any printer head shuffling. Up to 80 graphics characters can be printed in one long pass without shuffling. The Hot Shot also has an internal socket for user installable 8K memory chip, greatly increasing its buffer capacity. The Hot Shot has a set of 8 DIP switches which are constantly monitored for selection changes. These selections include all the standard options, plus DRAFT/NLQ mode, 1525 mode, TRANSPARENT LOCK, and ENHANCED FEATURES LOCK. The Hot Shot also utilizes its command channel to allow selection of over a dozen advanced features including single/double density graphics on Epson compatible printers! On most printers, you can print your letter in Draft mode until you are satisfied and then switch the DIP switch to Near Letter Quality mode for your final printout. The Hot Shot has many more features than we are able to describe here. We are so sure that you will love its performance that we offer a 30 day money back guarantee if you are unsatisfied for any reason. Order your Hot Shot today!

$59.95 (3.00 S&H)
(with 8K buffer installed $74.95)

DELUXE RS232C INTERFACE for modems, etc.

The Deluxe RS232 Interface is the recommended interface for hooking up a standard RS232 modem to your Commodore computer. It hooks up to the USER I/O port of your C64, C128, 64C, SX64, VIC-20, and Plus4 computers. It provides full +10v to -10v RS232 signals for compatibility with all standard RS232 devices. It supports pins 2 thru 8, 12, 20, and 22. These are the standard RS232 pins required for full compatibility and no other interface currently supports all these signals. A three foot cable comes as part of the interface. Switches in the interface cover allow for changing from DTE to DCE. The Deluse RS232 Interface is recommended by Commodore, Avatex, and others. Easy to understand instruction manual includes type-in BASIC terminal program.

$49.95 (2.00 S&H)

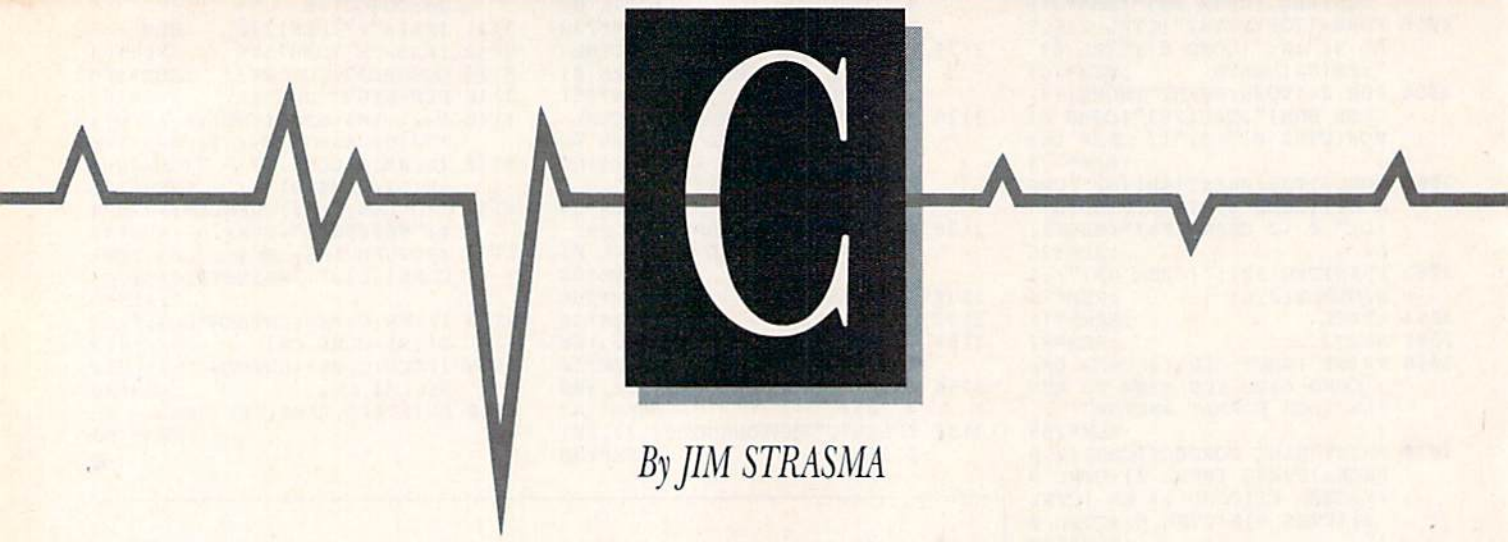
SERIAL PRINTER INTERFACE for serial printers

This is the interface you need to hook your serial printer to your Commodore computer. The Serial Printer Interface connects to the Commodore serial bus and then to the RS232 connection on your printer computer. This ensures maximum compatibility with all your software. The Serial Printer Interface supports graphics on most popular dot matrix printers. DIP switch settings on the interface allow you to select from 75 to 19200 baud. Also select word, parity, and DTR or XON/XOFF handshaking. Power either from cassette port or an external supply (not included). Plus4 requires external supply. Recommended by Brother, Panasonic, and others.

$79.95
(3.00 S&H)

See your local dealer or
CALL (206) 624-4985
VISA, MC, and COD welcome. Add shipping amount next to price. 30 Day money back guarantee if not satisfied (less shipping). Dealer inquires very welcome. Call today!

Dealers: Call us!
Omnitronix, Inc.
760 Harrison St. — Seattle, WA 98109



By JIM STRASMA

Do you have a problem or question about your Commodore computer? Commodore Clinic can help. Just send your question on a postcard to:

Jim Strasma
Commodore Clinic
PO Box 6100
Macomb, IL 61455

Queries are answered only through this column, and, due to the available space and the volume of mail, we select for publication only those questions that are likely to appeal to the majority of our readers.

HARDWARE

***Q:** I've been advised to buy the C-1660 modem to use with my C-64. I thought the C-1670 was the same kind of modem, only faster, with the ability to automatically switch to different speeds. Which modem is better?*

Russ Herling
Rockville Centre, NY

A: In the world of modems, faster is usually considered better, since most phone companies and on-line services charge by the minute. A 1200-baud modem transmits and receives information four times faster than a 300-baud modem, potentially cutting down the time you pay for by a corresponding amount. On the other hand, some on-line services charge extra for 1200 baud, so, if all you want is to read and type messages, 300 baud may be preferable. A speed of 300 baud is comfortable for reading and faster than most people type.

If you think you'll ever want the added speed of a 1200-baud modem and can afford its higher price, buy the 1670. It works at both 300 and 1200 baud and has a handy, built-in speaker to inform you, in those seconds before you're connected to the system you're calling, of happenings on the phone line, such as dial tones, busy signals, electrical interference and irate people awakened in the middle of the night.

***Q:** Where can I buy a one-slot expansion board—just an adapter—to insert into the game port so that game cartridges can plug into it and not into the game port itself?*

Robert Desko
Endicott, NY

A: Value-Soft (9513 SW Barbur Blvd., B-56, Portland, OR 97219), a regular advertiser in *RUN*, offers exactly what you're looking for. Called LBow, it includes a reset switch and sells for about $20. You can order one by calling 1-800-544-SOFT.

***Q:** I'm doing some work with the audio/video port on my C-64. My* C-64 Users Guide *and* C-64 Programmer's Reference Guide *(1983 edition) describe the port as a 5-pin DIN connection, but my computer has eight pins. What are the extra pins for?*

Matthew C. Sutton
Fraser, CO

A: The functions of the first five pins of your 8-pin video connector are the same as in the older 5-pin version, and if you had an older 5-pin video cable, it would plug into your 8-pin connector. Of the three added pins, only one is connected to anything. The new pin 6 carries Chroma, the color component of the video signal being sent to the display monitor. Pin 1 carries the rest of the signal, called Luma, for luminance, or brightness.

By separating the Chroma and Luma signals in the computer, rather than combining them into the composite video-out signal used in the first C-64s, Commodore was able to improve the picture quality on its monitors without the high cost of the completely separated RGB signals used in 80-column mode on the C-128 and in the Amiga.

Physically, pin 6 is at the center of your connector, with pins 7 and 8 at the top, above pins 1 and 3, respectively. The other pins are numbered as shown in the manuals. The manuals picture the connector as you'd see it when facing the back of the computer.

***Q:** Is there a big difference between Commodore's new model 64C and my C-64? Also, would I need to buy a new disk drive to use with the 64C?*

Albert Schumacher
Address unknown

A: The main changes in the 64C are the plastic housing, which has been redesigned to match the style of the C-128, and the inclusion of the GEOS operating system shell program. There have been some internal

WHITE HOUSE COMPUTER

P.O. Box 4025, Williamsport, PA 17701

ORDER TOLL FREE 1-800-351-3442

Customer Service and PA Residents call 1-717-322-7700

Free shipping on all Visa, Mastercard and Cash orders over $50 in Continental U.S.A.

— COMPUTERS —

64C	VERY
C-128	LOW

— MONITORS —

AMDEK

300G	$117
300A	127

MULTI TECH

13" Color W/Cable	$165

THOMSON

CM365 Color RGB/Green W/Cable	$269

MAGNAVOX

Green	$ 75
Amber	85

GOLDSTAR

2015G TTL/Green	$ 83
2015A TTL/Amber	85
4030 13" 40/clm Color/RGB	240
4015 13" 40/80 clm Color/RGB	270

SANYO

DMC 5500 Color	$169

— DISK DRIVES —

1541C	TOO LOW
INDUSGT C-64	TO SHOW
1571	CALL

— INTERFACES —

PPI	$ 40
MW350 10K	56
Xetec 8K	59

— PRINTERS —

STAR MICRONICS

NP-10 100 CPS/NLQ30	$179
NX-10	225
NX-10C	235
NX-15	350
Powertype	179
ND-15	445
NR-15	540
NB-15	999

PANASONIC

1080	$209
1080I	220
1091	275
1092	300
3131	259
3151	CALL
1592	CALL

SEIKOSHA

SP1000UC	$169
SP1000A	185
MP1300A 300 CPS/Color/NLQ	625

OKIDATA

Okimate 10	$175
Okimate 20	200
182	219

JUKI

6100	$450
6300	785
6500	995
5510C Color Printer	465

— SOFTWARE —

BATTERIES INCLUDED

Consultant	$ 37
Paper Clip II C-128	49
Paper Clip C-64/128	36
Paper Clip W/Spell	49
Spell Pak	30

ACCOLADE

Fight Night C-64/128	$ 20
Hard Ball C-64/128	19

ACTIVISION

Championship Baseball C-64/128	$ 23
Hacker C-64/128	19
Music Studio	22
Hacker II	26

BERKELEY

Geos	$ 38
Font Pack	20
Desk Pack I	23
Geo Dex	26
Writer's Tool	CALL

BRODERBUND

Print Shop	$ 28
Bank Street Writer	31
Bank Street Speller	31
Bank Street Mailer	31
Print Shop Companion	23
Karateka	18
Lode Runner	18
Graphics Library 1	16
Graphics Library 2	16
Graphics Library 3	16
Where in the Word is Carmen	24

DATA EAST

Karate Champ	$ 25
Kung Fu Master	25
Tag Team Wrestle	25

DIGITAL SOLUTION

Pocket Filer	$ 29
Pocket Planner	29
Pocket Writer	29

ELECTRONIC ARTS

Chessmaster 2000	$ 30
Adventure Construction Set	30

— SOFTWARE CONT'D. —

One on One	12
Ultima III	38
Ultima IV	43

EPYX

Championship Wrestling	$ 28
Super Cycle	28
World Games	28

FIREBIRD

Elite	$ 19
Pawn	32

MICROPROSE

Conflict in Vietnam	$ 23
Crusade in Europe	24
F-15 Strike Eagle	21
Gunship	24
Kennedy Approach	21
Silent Service	21
Top Gunner Series	18

SPRINGBOARD

Certificate Maker	$ 31
Clip Art Vol. 1	19
Clip Art Vol. 2	25
Graphics Expander	25
News Room	31

SUBLOGIC

Baseball	$ 31
Flight Sim. II	31
Football	26
Night Mission Pinball	21
Scenery Disk	14

TIMEWORKS

Data Manager 128	$ 43
Partner 128	43
Swiftcalc 128	43
Sylvia Porter 128	43
Word Writer 128	43
Partner 64	37
Accounts Payable 64	37
Accounts Receivable 64	37
General Ledger 64	37
Payroll Management 64	37
Sideways 64	21
Word Writer/Spell 64	31

Ordering and Terms: Place orders Mon.-Fri. 9 am-6 pm. **Customer service calls taken Mon.-Fri. 10 am-4 pm.** No deposit on C.O.D. orders. Free freight on all prepaid cash orders over $300 in the continental U.S.A. APO and FPO orders add $5 per hundred. Priority mail add $10 per hundred. All foreign orders add 8% for shipping. UPS shipping add $4 per hundred East coast, $5 per hundred West coast. PA residents add 6% sales tax. Free shipping for PA residents. Orders by company and personal checks held three (3) weeks. Defective products require prior return authorization. Defective products will be replaced or repaired according to warranty. **No used or reconditioned products sold. Prices and availability are subject to change without notice. No cash refunds.**

Circle 97 on Reader Service card.

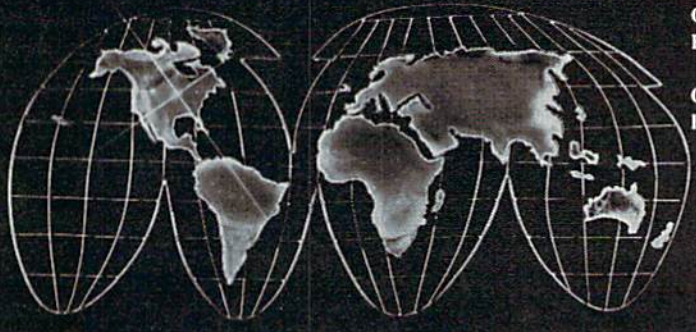
HOW TO GET THE MOST OUT OF GEOS™

— for the new user who wants to know more about GEOS and how to make it work for him;

— for the advanced user who wants more flexibility than GEOS alone offers;

— for the programmer who wants to write his own utilities

— the book you need when the manual is not enough;



HOW TO GET THE MOST OUT OF GEOS gives you the information that you need to use this powerful program to your best advantage. A team of experienced users and programmers examined GEOS inside and out to give you:

- shortcuts to make your work go faster and smoother;
- undocumented features that you will want to take advantage of, or avoid;
- translation utilities to import text and graphics from other popular programs;
- conversion utilities to let you transmit GEOS files to your friends via modem;
- the GEOS file structure, so programmers can write utilities for their own special needs; and
- a map of important memory locations so advanced programmers can create their own custom utilities.

GEOS is a trademark of Berkelely Softworks.

Comprehensive Reference Book $14.95

Complete Programs & Utilities Disk $9.95

Add $2.50 shipping and handling
Illinois residents add 6% sales tax
C.O.D. orders additional $2.00
Make payable to Midnite Press

ORDER LINE:

(800) 222 - 4441

VISA

Midnite Press
Midnite Software Gazette

1212 Hagan, Champaign, Il. 61820

Dealer inquiries welcome

Circle 82 on Reader Service card.

Free Spirit Software, Inc.

538 S. Edgewood
La Grange, IL 60525
(312) 352-7323

1541/1571 DRIVE ALIGNMENT

Avoid costly repair bills! Perform your own alignment. 1541/1571 Drive Alignment diagnoses and reports the alignment condition of the disk drive as you perform adjustments. An on-screen HELP menu is available while the program is running. Full documentation includes section on how to load Alignment program even when the drive is badly misaligned. Auto-boots to all modes. Works on 1541, 1571 in 1541 or 1571 mode, C64 or C128 in 64 or 128 mode. Only $34.95!

SUPER DISK LIBRARIAN

A full featured disk cataloging and library system for the C128 in 128 mode. With one keypress all programs on a disk are cataloged. Catalog up to 1000 disks and 15,200 program names! Operates in fast mode with 80 column display. Catalogs 1541, 1571 and CP/M Plus formatted disk directories. Reads heavily protected disks! Printer output includes library index, full library report, master program list, category program list and disk labels. Also contains full featured disk utilities section including all CBM DOS commands plus rename a disk, copy protect a disk, change disk format without affecting data & much more! Fully documented. Organize your disk library & more for only $29.95!

MUSIC OF THE MASTERS

Free Spirit's highly acclaimed Music of the Masters series is a must for all music lovers. An hour of classical music per disk for the C64 or the C128 in 64 mode.
Music of the Masters I - Handel, Haydn, Mozart, Bach, Beethoven & many others!
Music of the Masters II - Minuets, waltzes, sonatinas & more from Bach, Brahms, Beethoven, Chopin, Schubert & many others.
Music of the Masters III - Mostly Mozart.
Music of the Masters IV - Best of Bach.
Music of the Masters V - Popular themes from the greatest & best known works of the Masters. $9.95 per disk, 2 for $17.95, 3 for $24.95, 4 for $31.95, order all 5 disks for only $38.95!

The Great War - WWI strategy game for the C128 in 128 mode and 1571 disk drive. **Armies** of 17 countries represented. Hundreds of hours of challenge. Disk - $29.95

BASICally Simple 64 - How to use all basic 2.0 commands in Basic programs. Disk - $14.95

BASICally Simple 128 - How to use all Basic 7.0 commands in Basic programs. Disk - $19.95

Programmer's Notebook - High speed storage & retrieval system designed specifically for the programmer. Index magazine articles, programming routines or other computer related information. For the C128 in 128 mode. Disk - $19.95

Mr. Quizzer - Program to prepare quizzes as a general aid to learning. Prepare multiple choice, vocabulary, spelling, T-F, or general question-answer tests. Works on C64, C128 in either 64 or 128 mode, 40 or 80 column display, 1541 or 1571 disk drive, Commodore & compatible printers. Disk - $19.95

Free shipping & handling! Immediate delivery! Illinois residents add 8% sales tax. Send check or money order to:

Free Spirit Software, Inc.
538 S. Edgewood
La Grange, IL 60525

Circle 144 on Reader Service card.

Commodore Clinic

changes also, such as in the power supply, but nothing to justify replacing a properly working C-64 with a 64C. If you wish to own a copy of GEOS, it's regularly advertised in *RUN* and works fine on C-64s of any age.

Q: Commodore ran an advertisement in the August 1985 issue of RUN, *claiming that the C-128 can be expanded to 512K. But I've read that RAM expansion modules won't work on early releases of the C-128. If my model can't be expanded, what recourse do I have? I feel Commodore should replace it, or the Federal Trade Commission should bring charges against Commodore for fraudulent advertising.*

Eugene Cozzi
Barre, VT

A: Commodore has had enough worries without new attention from the FTC, so first give them (or better yet, your original dealer) a chance to set things right. If that doesn't work, you do have some recourse if you bought the RAM expander (or the C-128 itself) on the strength of that advertisement, and the RAM expander turns out to be incompatible with your particular machine. A lawyer can explain the steps to take if necessary.

A while back there was a similar question about CP/M for the C-64, which Commodore advertised for quite some time before it was actually available and which didn't work with all C-64s when it did appear on the market. As I recall, Commodore made some assurances to the Federal government that they would stop advertising products and features not actually available.

SOFTWARE

Q: I've looked everywhere for disk mailers, without luck. Where can I get them?

David Perdue
St. Clairsville, OH

A: I use 5- by 7-inch photo mailers and find them entirely satisfactory. The only one that ever failed was intentionally folded in half by the postal service to cram it into a small post office box.

I buy "#1 stay flat" photo mailers (minimum quantity 100) from Calumet Carton Co., PO Box 405, S. Holland, IL 60473. If you don't need that many, Quill Corp. (PO Box 4700, Lincolnshire, IL 60197) sells a true disk mailer with a non-static foam liner in quantities as small as five. However, you probably could order the same mailers through any office supply dealer.

Q: Is a dual drive on the C-64 and C-128 addressed as device 8, drives 0 and 1? Or is it addressed as devices 8 and 9? Does CP/M on the C-128 require a dual drive, or will two single drives work? Is CP/M drive A Commodore's device 8 and CP/M drive B Commodore's device 9, or is CP/M drive A Commodore's device 8, drive 0 and CP/M drive B Commodore's device 8, drive 1?

I also need to know if commercial programs, in general, are flexible enough to permit different drive configurations. Do you see my confusion?

Ronald Brown
Tuscaloosa, AL

A: You aren't the only one who's confused, since Commodore has sold drives working in both the ways you mention. Commodore's dual drive units, those with two physical disk drives inside a single cabinet, have a single device number, with one of the drives addressed as drive 0 and the other addressed as drive 1. These were the first drives Commodore developed, so they're well supported by its operating systems and older commercial programs.

With the advent of the VIC, Commodore went in another direction, putting only one physical disk drive inside each drive unit. When VICs, C-64s and C-128s are used with two disk drives in separate cabinets, the drives are addressed as devices 8 and 9, rather than as drives 0 and 1.

Further complicating matters, the older dual drives can be adapted to work with the VIC, C-64 and C-128, and, when used, still need their two drives referred to as drive 0 and drive 1.

The bottom line here is that most of the really good commercial programs that require two disk drives can address them either way, depending on your particular equipment.

As for CP/M, on the C-64 it expects drive B to be the second drive in a

Have your Commodore® look as smart as it works.

Consolidate your 64, 64C and 128 system with the Command Center.

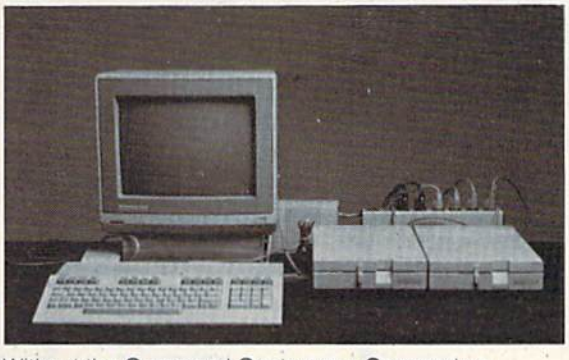
With the Command Center, your system is compact and complete.

Get your workspace back again.

The Command Center will untangle your wires, unclutter your desk and put peripherals at your fingertips. Condensing your whole system into one compact unit, you might consider it the **ultimate** Commodore peripheral. You get Commodore value with the look of a more expensive system.

Just look at all it includes:

- **Built-in AC Power Strip** with power surge and voltage spike protection, line noise filtering and power outlets.
- **Built-in Drive/CPU Cooling Fan** to prevent overheating.
- **Modular Telephone Plug**, with its own on-line/off-line telecommunications switch. (Option on 64 and 64C).
- **Master AC Switch** for easy system power-up.
- **Single or Dual Drive Configurations** with the standard drive insert.



Without the Command Center your Commodore peripherals look cluttered and take up most of your desk top.

Many built-in conveniences add to the Command Center's value.

®Commodore is a registered trademark of Commodore Electronics Ltd.

-KETEK

Free 30-day trial offer
and one-year warranty.

For faster service, call
1-800-626-4582 toll-free
1-319-338-7123 (Iowa Residents)

KETEK P.O. Box 203
Oakdale, IA 52319

YES! Rush me a Command Center to complete my system. I may enjoy it for up to 30 days and return it for a full refund.

- ☐ 64 ..... $119.95
- ☐ 64C $129.95
- ☐ 128 ..... $149.95

(Please include $3.50 for shipping and handling.)

Name

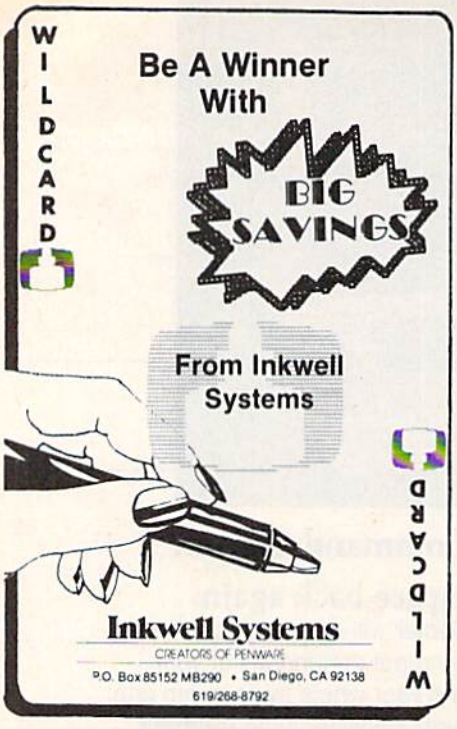
Address

City State Zip

Phone Number

DEALER INQUIRIES INVITED

Circle 126 on Reader Service card.



dual-disk unit. Since very few C-64 owners have that setup and CP/M virtually demands two disk drives, the newer C-128 version of CP/M lets drive A be device 8 and drive B be device 9. If you have only one disk drive, CP/M on the C-128 also lets you address a virtual drive E as device 8 and then swap disks in the single drive.

Q: I'm using Timeworks' Data Manager 128 with a 1571 disk drive. I've entered 230 four-page records, but when I enter record number 231, I get error number 52, File Too Long. Why is this, when the disk directory still shows 588 blocks free?

Steve Brichter
New Windsor, NY

A: Although a single sequential file can grow indefinitely within the limits of the disk, a single relative file has a limited size—something C-64 owners didn't have to worry about because the limit is slightly larger than the capacity of a 1541 disk.

When this problem last surfaced, back in the days of the Commodore 8096 computer and 8050 disk drive, programs like Silicon Office solved it by treating two or three separate relative files as though they were part of the same one. You can do something similar by putting all your records whose keys start with the letters A–M in one file, and all those whose keys start with N–Z in a second file. This is not an ideal solution (especially when you need a Zip code-sorted report), but it may be your only solution until either programs like Silicon Office appear for the C-128 or Commodore expands the capacity of relative files, as they did for the 8250 disk drive during the last days of the PET.

Q: I've been using a Basic language program for two years to calculate handicaps and keep win-and-loss records for my golf league here in the lower Rio Grande valley of Texas. My problem arises from the fact that the program uses a directory entry for each golfer, and the disk drive allows only somewhat less than 144 directory entries. When the league swells to over 160 golfers each winter, I end up doing calculations and keeping records for 25–30 of them as a separate operation.

So, last summer I purchased a C-128 with the expectation that, when I got a 1571 disk drive to use with it, I'd have twice as many directory entries (288) available, since the 1571 uses both sides of a disk. But, alas, there are still only 144. What can I do?

George Cowing
Pharr, TX

A: If you really want a larger directory, you'll need to buy a hard disk drive. Commodore's old 9300 hard disk drive provided 25,000 directory entries—enough for any league—and the newer, third-party drives should match it.

However, before you make that investment, try this software solution: Instead of 160 sequential files, one per golfer, use one relative file with one record per golfer. If your records need to be larger than one relative file record allows, you can allot each golfer two consecutive records and make a corresponding correction when you're actually looking up those records.

Q: I have the program Micromon on disk, but I can't get it to activate. What SYS command must I enter to use it?

Jim Smith
Sterling, KS

A: First, be sure you're loading the program without relocation, as follows:

```
LOAD "0:MICROMON",8,1
```

Then, to begin using it, the usual SYS command is:

```
SYS(4096)
```

The SYS command assumes Micromon is at address $1000, its normal address on distribution copies. However, the program comes with instruc-

A TO COMPLETE YOUR WINNING HAND
Flexifont™
Only $29.95
The Icon, Font and Character Generator
• Create custom icons, fonts and characters with ease
• 33 font styles to use right away
• The perfect companion to the Flexidraw Hi-Res Graphics System
ICONS
PATTERNS
A

Circle 24 on Reader Service card.

tions for relocation, so the copy you got may load into some other address, such as $C000. I prefer the latter address myself, since it's out of the way of Basic programs.

PROGRAMMING

Q: How can I access a user file from a disk?

L. P. Thomason
Jacksonville, FL

A: To read a user file, just treat it as a sequential file, but replace the S for sequential in the File Open statement with a U for user. For example, to read a user file named Fido from drive 0 of device 8, you could use this Open command:

```
OPEN 1,8,3,"0:FIDO,U,R"
```

Once opened, user files can be read and written to in the same way as sequential files.

Q: I need a Basic statement, like Gosub LL, where LL is a variable. I've found such routines for nearly every computer except the one I use, the C-128 in 128 mode.

Ronald Fein
Kingston, NY

A: Although there are hacker tricks available to do exactly what you want, there is a far better solution—one that works with all versions of Commodore Basic and all Commodore computers from the first PET to the C-128. It's the On Gosub command.

Presumably, you want to write a piece of code like the following:

```
10 INPUT"CHOOSE 100, 200, OR 300";LL
20 GOSUB LL
```

where LL contains the line number that begins the subroutine you wish to execute. This approach, although attractive on the surface, is dangerous, since you may someday need to renumber your program lines, and no renumbering program is smart enough to change line numbers in the text inside your Print statements.

The alternative is as follows:

```
10 INPUT "CHOOSE 1, 2, OR 3";LL
20 ON LL GOSUB 100, 200, 300
```

The only possible disadvantage to this approach is that you now enter the numerical position of the desired line number within a list of line numbers, rather than the line number itself. However, I consider that an advantage, since it's faster and easier to type one digit than three.

UPDATE

Update: In the December 1986 Commodore Clinic, a letter was published from Fred Goldsmith, who was looking for a genealogical program for the C-128. I use the Personal Ancestral File from the Church of Jesus Christ of Latter-Day Saints (the Mormons) in Salt Lake City, Utah. It keeps track of each relative's position in your family tree by individual entry, marriage entry and children entries. You can also use it to keep track of your genealogical research.

Printouts include individual entry forms, family charts, pedigree charts, descendant charts, lists sorted in various ways, individual notes and research data. Another feature of this program is its ability to transfer information to other users via modem.

I've entered data on over 1600 people so far, and the program has performed beautifully. The best part is that it costs only $35. The only catch is that it must be run in the 128's CP/M mode, which can be a bit slow unless you use the 1750 RAM expander to hold data files. To use Personal Ancestral File, you'll need an 80-column monitor, a CP/M-compatible printer with an interface able to print 133 columns across a page, and either two 1571 disk drives or one drive plus a RAM expander.

John Hughes
Sonora, CA

A: I found out about Personal Ancestral File last fall, and I've heard nothing but the highest praise for it since. Though I haven't tested it, it's surely worth at least $35 to anyone interested in genealogy. The address for ordering is Ancestral File Operations Unit, Genealogical Department, 50 East North Temple St., Salt Lake City, UT 84150. Be sure to request the Kaypro CP/M version. ■

D540 Disk Drive

Commodore 1541 & GEOS COMPATIBLE

- COOL—ONLY 15W (vs. 25w for 1541)
- DIRECT DRIVE SYSTEM—stable alignment
- 6 MONTH WARRANTY
- EXTERNAL DEVICE NO. SELECTION—Simple
- DUAL SERIAL PORT—daisy chaining
- C128 COMPATIBLE in C64 mode
- COMPACT SIZE—2 × 6 × 10 ¾ inches
- 5¼" SSDD, 175KB CAPACITY
- $149.00 EACH (NJ residents add $8.94 tax)

To Order Call 1-800-521-9298

(in NJ, dial 201-231-8686)

Visa, Mastercard or Money Order. Allow $8.00 shipping & handling. Send mail order with payment to:

H&M Marketing

P.O. BOX 8339 SOMERVILLE, NJ 08876

Circle 4 on Reader Service card.

The NLQ Chip

Trade in Your Emphasized Type For Near-Letter Quality

The Gemini 10X printer is now available from mail-order dealers for close-out prices of about $150. The price is a good one for a printer with an adjustable tractor feed and letters with true descenders, but, like many dot-matrix printers, the 10X has a telltale trait—its small, squarish letters clearly mark it as a dot-matrix printer.

For less than $50, however, it's possible to greatly improve the print faces. I was at the point of buying another printer when I stumbled upon a module that replaces two chips in the Gemini and, in the process, gives the 10X a different typeface, making it look like a new machine. The NLQ Chip from ESP Corporation is what does the trick.

The surgery needed for this facelift is painless. The only equipment required is a small jeweler's screwdriver for prying up the two integrated circuits and a regular screwdriver to remove the two screws holding the case together. When the top is separated from the bottom, a circuit board is exposed.

The module that provides the near-letter quality comes with a diagram clearly showing which two integrated circuits must be removed. They're side by side, on the top-rear center of the board. After you pull them out, you'll see that the module, which is about the size of a matchbox, has three rows of legs that fit back in where the sockets were located. Aligning them takes about as much eye-hand coordination and dexterity as is needed for most strategy games: Take your time and everything will become clear.

Reassemble the printer and you're finished. The new typeface replaces the Gemini's standard italic set, which you may or may not miss. To invoke the new face, simply enter the printer command formerly used for the italic set. The difference will astound you—it's a new printer! The "y" no longer looks like a "v" with one side too long, serifs have been added to other letters, and the type in general is much clearer.

What's the catch? Speed, mainly—the new letters require two passes of the print head. One pass will make the upper portion of the letters and another will add the descenders and fill in any gaps. The extra pass is undetectable in the finished product. A one-page business letter will roll out of the printer in slightly over one minute with NLQ, as compared with the 30 seconds that the Emphasized Type mode would take.

The chip is totally transparent to all graphics programs, including The Print Shop, Blazing Paddles and geoPaint.

There is one small drawback: The open and closing double-quote marks are the same, so an open quote looks odd upon close examination. But that's a small price to pay for a big improvement in the overall typeface.

When ordering, be sure to include the serial number from your Gemini 10X, 15X or Delta 10/15 printer—some serial numbers take different chips. And, think of it this way—where else can you get a "new"

Figure 1. *Various print modes of the Gemini 10X.*

Draft mode:

```
Draft mode for the Gemini:
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
```

Emphasized mode:

```
Emphasized mode for the Gemini:
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
```

NLQ Chip mode:

```
NLQ Chip for the Gemini:
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
```

If the space program had advanced as fast as the computer industry, this might be the view from your office.

And space stations, Martian colonies, and interstellar probes might already be commonplace. Does that sound outlandish? Then bear these facts in mind:

In 1946 ENIAC was the scientific marvel of the day. This computer weighed 30 tons, stood two stories high, covered 15,000 square feet, and cost $486,840.22 in 1946 dollars. Today a $2,000 portable can add and subtract more than 20 times faster. And, by 1990, the average digital watch will have as much computing power as ENIAC.

The collective brainpower of computers sold in the next two years will equal that of all computers sold from the beginning to now. Four years from now it will have doubled again.

It's hard to remember that this is science fact, not fiction.

How do people keep pace with change like this? That's where we come in. We're CW Communications/Inc. — the world's largest publisher of computer-related newspapers and magazines.

Every month more than 12,000,000 people read one or more of our publications.

Nobody reaches as many computer-involved people around the world as we do. And nobody covers more markets.

In the United States, we have twelve publications: *Computerworld, InfoWorld, Micro MarketWorld, Network World,* and *Digital News* serve computer and communications professionals, including MIS executives and professionals, communications managers, executives at reseller organizations, micro experts, and industry executives and marketers.

We also have six publications which concentrate on specific personal computers and their compatibles. *PC World* (IBM), *MacWorld* (Macintosh), *inCider* (Apple II), *80 Micro* (TRS-80), *RUN* (Commodore C-128/C-64) and *AmigaWorld* (Commodore Amiga). And we have a new publication dedicated to the emerging field of desktop publishing: *Publish!*

And we have similar publications in every major computer market in the world. Our network publishes over 70 computer publications in more than 25 countries — Argentina, Australia, Austria, Brazil, Chile, Denmark, Finland, France, Greece, Hungary, India, Israel, Italy, Japan, Mexico, The Netherlands, Norway, People's Republic of China, Saudi Arabia, Singapore, South Korea, Spain, Sweden, Switzerland, United Kingdom, United States, Venezuela, and West Germany.

The sooner we hear from you, the sooner you'll hear from our readers

Simply put, we make it easy for you to reach your target audience — and for them to reach you. Call today for more information. You'll find the number below.

CW COMMUNICATIONS/INC.
An International Data Group Company
375 Cochituate Rd., Box 9171, Framingham, MA 01701-9171, (617) 879-0700

This publication is available in microform.

University Microfilms International

300 North Zeeb Road
Dept. P.R.
Ann Arbor, Mi. 48106
U.S.A.

30-32 Mortimer Street
Dept. P.R.
London W1N 7RA
England

printer for $50? *(ESP Corporation, 7900 Tamiami Trail, Sarasota, FL 34243. $49.95.)*

Lonnie Brown
Lakeland, FL

MPS-1200

Announcing... Commodore's Latest And Greatest Printer

When Commodore announced the introduction of the MPS-1200 printer, I was anticipating a benchmark printer. After all, if the MPS-1200 (which actually began life as a Citizen 120D) was to be an improvement over the fast, quiet, software-friendly MPS-1000, there was ample reason to be excited. The changes that were to be made included faster print speeds of 120 and 24 cps in Draft and NLQ modes, respectively, a larger print buffer and a multitude of print options.

First Impressions

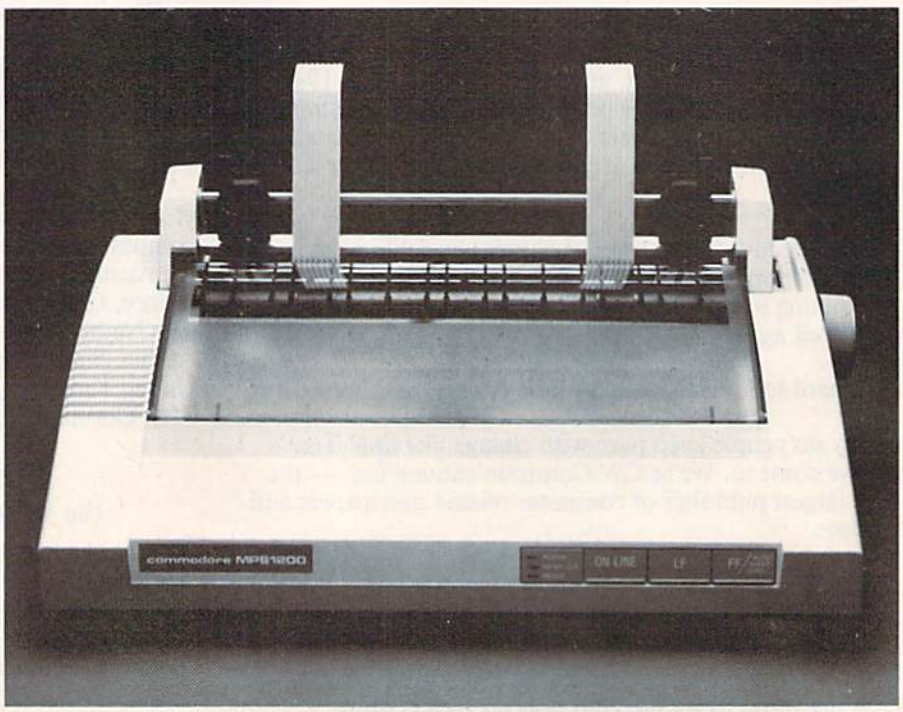
The first thing I noticed when the MPS-1200 arrived was a trio of front panel buttons. These are used to control the On-/Off-Line modes and the paper line and form feed. A glance through the owner's manual revealed the usual hex dump feature, printer self-test and single-sheet form feed that can also be controlled by these buttons. In addition, the MPS-1200 comes with an inked ribbon cartridge reminiscent of the MPS-803's cartridge, a removable tractor-feed unit and a single-sheet removable paper-feed guide.

The print head is of a nine-pin design. It can print bi-directionally and works well with dot-addressable graphics printing. Both Commodore ASCII and true ASCII are available, along with an Epson Code mode that allows Epson FX printer emulation.

You interface the MPS-1200 to your computer system with a six-pin serial cable and a removable interface cartridge that slides in and out of the right side of the printer. Two serial ports and a bank of eight DIP switches are housed on the interface cartridge.

Changing the DIP switch settings, which can be used to activate Commodore or true ASCII modes and the NLQ mode, is a little awkward. The process is rather involved because you must either open the printer's plastic cover and reach inside with a pen, or remove the interface cartridge, change the DIP switch settings and then re-install the cartridge.

This arrangement is more troublesome than it has to be. There are



Commodore's MPS-1200 printer.

The blood of Kings or of Knaves or both. Family Roots software helps you trace your bloodlines back through lost generations and the mists of time.

For your Apple, IBM, Commodore, Kaypro, TRS-80,* and many others, Family Roots offers all kinds of genealogical assistance: Individual and group sheets, charts, name indices, general search and text capabilities. Adapts to most disk drives, printers, and screens. You get more utility programs, plus lots of personal control. A comprehensive (new) manual is included.

Blood.

All for just $185.

Write or call today for more information and a free brochure.

Family Roots™

Quinsept, Inc.
P.O. Box 216
Lexington, MA 02173
(617) 641-2930

American Express, Visa, and MasterCard gladly accepted.

* *Trademarks for Apple Computer Inc., International Business Machines, CBM, Inc., Digital Research and Tandy Corp.*

Circle 220 on Reader Service card.

printers being produced with easily accessible buttons instead of DIP switches, so the MPS-1200's DIP-switched interface cartridge seems outdated in design.

Print Options

Exhaustive is a word that well describes the list of print options offered by the MPS-1200. I quickly discovered that the Epson Print mode operates independently of any other mode; as a result, the DIP switch that toggles between Commodore and true ASCII can be in either mode when accessing Epson mode. Epson mode changes the print in much the same way that accessing the ASCII mode changes the format of some Commodore ASCII commands.

The Epson mode is beneficial when using software that has Epson printer drivers. Leaving the Print mode in Commodore ASCII and activating the Epson mode didn't reveal any incompatibility problems. On the other hand, leaving the printer in Commodore ASCII mode allows it to emulate a Commodore 1525/MPS-803 printer and create seven-pin graphics. Eight- and nine-pin graphics printing are also available.

The MPS-1200 includes two print pitches—pica (10 cpi) and elite (12 cpi). Double width, compressed and combined compressed/double width are available with both pitches. This results in eight print sizes, ranging from 40 characters per line (pica expanded) up to 160 characters per line (elite compressed). All of these offer true descenders and are clear and readable.

There is a list of all the print options and their respective codes and command syntax at the end of the owner's manual. Since there are so many options, a useful addition to the manual would be a table showing which options can be successfully combined. Also, the print options are displayed with their hex values, so if you need to enter them in their decimal values, you'll have to make the necessary conversions.

Like the majority of dot matrix printers being marketed these days, the MPS-1200 offers near-letter quality (NLQ) characters in a 19 × 19 dot matrix. Despite this dense matrix, these characters are inferior to those created by the MPS-1000 and some other dot matrix machines possessing the NLQ print option. However, the excellent quality of the pica and elite characters in their various configurations seems ample compensation.

A partial list of some of the MPS-1200's other print options includes an italic character set, superscripts, subscripts, double strike, emphasized and vertical enlargement. A wide variety of programmable horizontal and vertical tab commands are also available. Dot graphics are offered in eight densities, ranging from 480 to 1920 dots per line and including single, double, high-speed double and quadruple density, plus four others that Commodore calls CRT Screen, one-to-one, hi-res CRT and two-to-one. Programmable line spacing permits settings starting at 1/6th of an inch and working in increments all the way down to 1/216th of an inch.

Complaint Department

My complaints regarding the MPS-1200 are few. Aside from the mediocre NLQ characters, there is a small problem that will catch the unwary by surprise. This occurs when the MPS-1200 is placed into configurations far removed from MPS-803/1525 emulation. It is critical that you know which mode the printer is in before attempting to perform anything but the simplest of printouts. During my first few weeks of testing, I would inadvertently leave the printer in a mode that prevented it from properly performing things like dot-addressable graphics printing. Until I discovered the source of the problem, I mistakenly assumed that the printer lacked the emulation it was supposed to possess.

Summary

When I think of the Commodore dot matrix printers of yesterday, such as the 1526/MPS-802, I realize what extensive improvements Commodore has made in its line of printers. I initially had mixed feelings about the MPS-1200 because of the idiosyncracies of its many print options. However, once I became accustomed to using the printer, I realized its full potential and came to like it very much. I feel that the MPS-1200 will do a lot to inspire confidence in the future of Commodore printers. *(Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 19380. $299.95.)*

Tim Walsh
***RUN* Staff** ■

DUST COVERS

★ CUSTOM MADE TO FIT
★ HEAVY 32-oz. VINYL ANTI-STATIC
★ EXTENDS EQUIPMENT LIFE
★ Choice of Colors Light Tan or Brown

COMPUTERS		PRINTERS	
C-64; Plus 4	8.00	C-MPS/803, C-1520	8.00
C-128	13.00	Panasonic 1090/91	13.00
Datassette (C2N)	5.00	Gemini 10 & Star 10's	13.00
Amiga 1000	13.00	Gemini 15 & Star 15's	16.00
(W/Amiga Mon. Stacked)	28.00	Okidata 92	13.00
Keyboard only	7.00	Okidata 120/192	13.00
Atari 800XL, 130XE	10.00	Okimate 10/20	8.00
Atari 520 ST	14.00	Epson MX/FX/RX80	13.00
IBM PC/XT	28.00	Epson LX80/C-1000	13.00
IBM 5051 Keyboard	8.00	Ssikosha SP-1000	13.00
(Dimensions Required for IBM Clones)		Comrex 220	13.00
		C'Itoh 7500	13.00
		Citizen MSP 10	13.00
		Atari 1027	13.00
		C/DPS 1101	16.00
DISK DRIVES		**MONITORS**	
C-1541, C-1571	8.00	C-1702, BMC Color	16.00
Amiga 3½" D/Drv	8.00	C-1902/Amiga	19.00
Amiga 5¼" D/Drv	9.00	Amdek 500-700	19.00
Indust GT, MSD SD-1	8.00	Teknika MJ 10/22	19.00
MSD SD-2	10.00	CM-141 (C-1802)	19.00
Enhancer 2000	8.00	Gold Star 13" Color	19.00
FSD-1	8.00	Thompson CM 365-66	19.00
Atari 1050	8.00	C-1902A/Magnvx 40	19.00
VIDEO RECORDERS	13.00	Magnavox 80	19.00
State Make & Model Include Dimensions		NEC 1225	19.00
		Taxan 220	19.00
		Sakata SC-100	19.00
PRINTERS		Zenitth 122/123	19.00
C-1525/MPS 801	10.00	Zenith 131/133	23.00
C-1526/MPS 802	13.00		

Order by stating MAKE, MODEL and COLOR CHOICE - TAN or BROWN with check or money order plus $1.50 per item ($4.50 max.) shipping and handling (Foreign air extra). Calif. Res. include 6.5% State Tax.

SPECIAL COVERS WILL BE MADE TO YOUR DIMENSIONS. SEND YOUR REQUIREMENTS FOR OUR LOW PRICE QUOTES.

Crown Custom Covers
24621 Paige Circle
Dept. B
Laguna Hills, CA 92653
714-472-6362

LOTTO CIPHER™

GET THE BEST ODDS ON ANY LOTTERY SIX NUMBER - PICK FOUR - DAILY GAME

- PRODUCES FOUR COMBINATIONS OF NUMBERS TO CHOOSE FROM.
- ANY AMOUNT OF BALLS AND NUMBERS CAN BE PROGRAMMED.
- PRINTS OUT PAST LOTTO NUMBERS DRAWN, PAST COMPUTER PICKS, AND NUMBER DRAW FREQUENCY LIST.
- RANDOM NUMBER GENERATOR INCLUDED.

$29.95 C-64/128

Window Magic

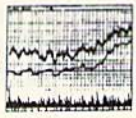
SUPER HI-RESOLUTION DRAWING IN MULTI OR MONO COLOR

- COPY
- FILL
- LINES
- DRAW
- COLOR SQUARES
- MIRROR, FLIP, AND SCROLLING WINDOWS
- ZOOM-EXPANDS A WINDOW TO DOUBLE SIZE
- SAVE AND LOAD YOUR WINDOWS ON DISK
- PRINTS ON STANDARD DOT MATRIX PRINTER
- CLONE COLOR ATTRIBUTES
- TYPES LETTERS AND GRAPHICS
- POLYGON SHAPES-EXPAND, SHRINK AND ROTATE, THEN STAMP ANYWHERE
- ZOOM PLOT-DRAW ON AN EXPANDED WINDOW AND YOUR DRAWING AT THE SAME TIME

$24.95 C-64/128

STOCK BROKER.

PROFITS GUARANTEED OR YOUR MONEY BACK



BUYING GOOD QUALITY, VOLATILE ISSUES AND USING THIS TRADING SYSTEM WILL HAVE YOU FULLY INVESTED AT THE LOWEST PRICES AND CONVERTING TO CASH AS THE STOCK NEARS ITS PEAK.

- TECHNICAL TRADING THAT WORKS.
- BAR GRAPH PRINT-OUTS.
- RECORD UP TO 144 STOCKS ON A DISK.

$29.95 C-64/128

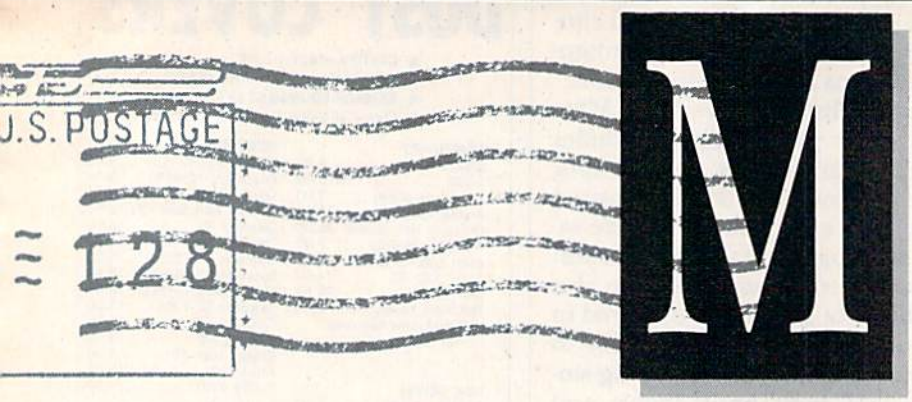
ACORN OF INDIANA, INC.

2721 OHIO STREET
MICHIGAN CITY, IN 46360

219-879-2284

SHIPPING AND HANDLING, ADD $1.50 - C.O.D.'S ACCEPTED
VISA AND MASTER CARD ORDERS ADD 4%
INDIANA RESIDENTS ADD 5% SALES TAX

Circle 260 on Reader Service card.



M

Sixth Sense Update

I'd like to update *RUN* readers regarding the Sixth Sense review published in the January 1987 Software Gallery. That product is now being distributed by our company, Prism Software, 401 Lake Air Drive, Suite D, Waco, TX 76710. The new price is $49.95.

James Domengeaux
Prism Software
Waco, TX

An Excellent Resource

I'm enclosing two disks for the Resource Center programs that have been offered in recent issues of *RUN*. I think it's fantastic that you're willing to take the time and make the effort to copy these programs for readers. This opportunity to build an educational software library is exciting to those of us working with children of various age levels and learning abilities. New programs always seem to rekindle our students' interest in the computer. This service, plus the quality and depth of your articles about computers in the learning environment, makes your magazine column most aptly titled—"The Resource Center."

Robert B. Lindsay
Dallas, TX

CalcAid Improvement

I've typed in and am using the CalcAid 64 program from the November 1986 issue of *RUN*. My congratulations on a fine piece of software and my thanks for sharing it with the rest of us. The fact that it runs in Basic makes it a little slow, but I'm not complaining, because the price is right!

I have found one small problem with the program. Each time I work on my budget for the current month, I have to save it under a new filename. This is rather cumbersome, and it eats up a lot of disk space. To improve the situation, I've modified line 25110 to read as follows:

```
25110 OPEN2,8,2,"@0:"+IN$+",S,W":
      GOSUB24500
```

Now I can save my work with the same filename as many times as I want. The updated file replaces the old file with the same name because of the @0: in the code.

Paul F. Jackson
Alto, MI

Thanks for your modification, Paul. Readers who make this change to CalcAid 64 should be sure to have enough space on disk to hold a large file.

Editors

Olivetti Printer File

I'm writing in regard to Michael Jones' letter in last December's Mail RUN, expressing the wish for more software to support the Olivetti PR-2300 printer. I, too, own a PR-2300 and am frustrated by the lack of compatible software.

My greatest frustration has been the inability to use the many special features of this printer with PaperClip. Now, however, after many hours of work and with the assistance of Batteries Included, I've written a printer file that enables me to do two kinds of underlining, as well as double-width and double-height printing.

Although I have a C-64, the printer file should work with the C-128 also. Anyone who wants it can send me a formatted disk, and I'll copy the file onto it for them.

Ira Stoller
3028 Nostrand Ave.
Brooklyn, NY 11229

Superbase Review

I'd like to comment on the review of Superbase 128 in the "Big Software for Small Business" article in the October 1986 issue of *RUN*. Your reviewer mentioned the problems some users have had accessing records on some 1571 disk drives with version 2 ROMs. I experienced problems with my 1571 reporting an "I/O ERROR #5" (Device Not Present) under various circumstances (not the same problem your article described). I contacted Progressive Peripherals and received the same advice that you reported: Change the ROM in the drive. But since I also experienced the same problem at times with my MSD drive and a 1541, I was a little skeptical about that solution.

I have version 2.0 of Superbase 128 and found that a friend has version 2.03. We tried his version on my equipment under the same circumstances and with the same disks that had been telling me that the drive was not there. Lo and behold, the problem did not occur with the later version.

Your reviewer also mentioned the

capability of having both Superbase and Superscript in memory at the same time, but passed over what is, for me, one of the most impressive and useful features of this arrangement: the ability of Superbase programs to pass command strings to Superscript. This feature lets you merge data from databases into letters, using the row and column math features of the word processor to perform mini-spreadsheet manipulations of data from the database.

All in all, the review was good and accurate, although a bit short to really give a full picture of the power these two programs bring to the C-128.

Larry Penland
Redding, CA

Appreciative Winner

I just wanted to drop you a note to thank you all for the goodies I won in your RUNaway contest.

Although I own a C-64 and do very little programming, nothing went unappreciated.

The C-128 material was greatly appreciated by a good friend who owns a 128. I shared the programming books and tutorials with two very good friends who love to program. The VIC-20 programs were a great gift for my brother, who has a VIC-20.

And the C-64 stuff? Well, I will continue to enjoy my gifts for years to come. Thanks a million.

Catherine T. Lingenfelser
Savannah, GA

Device One Interface Review

The review of our Device One printer interface by technical editor Tim Walsh in last December's issue of *RUN* made us take a long, hard look at the manual, and we are now rewriting it. The new manual, which is scheduled for release by December 15, 1986, will include many more examples, and the descriptions will be more concise, clear and comprehensive. Any Device One user who wants to trade his old manual for the new version can send in the old one and we'll gladly exchange it.

Mr. Walsh's concluding statement, that Device One "contains many features that I did not have space to mention" is quite true. I'd like to mention that Device One has three sizes of software-selectable, custom fonts, and that up to 17 different fonts can be used in one sentence. Four fonts are included in ROM.

Also, a banner utility lets you print full-size banners (8 inches high) and supports all three font sizes, Expanded mode, Underline mode and Reverse Field mode simultaneously. A letterhead utility and automatic page numbering are offered, and the ASCII mode converts PET ASCII files to standard ASCII format.

In addition, I'd like to clarify that the Device One "utility" that prints calendars is ROM-based. It's not a software utility.

In answer to the question regarding software compatibility, we don't know of any program that Device One won't work with. We didn't include a list of software the interface supports in the manual, since the list would be too long.

The new manual should make operating this interface much easier. We thank Mr. Walsh for making it clear that the manual needed reworking. I'm sure many future Device One users will appreciate the results of his comments.

Susan Dorn
Progressive Peripherals & Software
Denver, CO

Our thanks to Progressive Peripherals for pointing out these items of interest.

We'd like to mention that the Device One unit we reviewed had a tendency to become hotter after about four hours of operation. We determined that the unit's power supply was the source of this overheating.

Also, after about six weeks of use (and several weeks after the review was completed), the interface started making every 1571 disk drive we tested it with lock into 1541 mode. When we called Scott Maxwell, the designer of the unit at Progressive Peripherals, his response was, "Enter the command OPEN 15,8,15:U0>M1:CLOSE 15." This command didn't help, however.

Editors

Canadian Market

I have a complaint on behalf of *RUN*'s Canadian readers, who are being left out in our well-known cold. You often publish articles that mention services such as bulletin boards. However, only U.S. phone numbers are given. If a Canadian user who is new to telecomputing calls to see what one of these boards has to offer, it naturally takes him or her some time to get the knack of using the board. I'd be most willing to trade phone bills with almost anyone after one of these exercises.

There's a vast, untapped market in Canada for the large bulletin boards and other goods and services, but there's a need for these to have either local Canadian numbers or Canadian 800 numbers, or calling becomes discouragingly expensive.

Please try not to forget us up here in the snow.

Bryan R. Kilmer
St. Thomas, Ontario, Canada

Tracking Down a Trackball

I waited almost too long. Ever since I bought my C-64, I'd thought of buying a trackball, but I never got around to it. A joystick always seemed to do just as well. However, recently, with the advent of Electronic Arts' Marble Madness, I decided the time had come.

You guessed it! No one stocks trackballs anymore. I looked all over my area and beyond, and I called every distributor and software house listed in *RUN*. Finally, in desperation, I phoned *RUN*. They gave me numbers for two possible trackball sources, Wico and Tussey Computer Products. Those firms couldn't help, but then it occurred to me Atari might have a trackball I could use. In another call, *RUN* came up with a number for Atari. What do you know, they still sell trackballs!

I'd like to thank *RUN* for its help and pass along the information for getting a trackball from Atari. Their 64-compatible trackball is the 2600 Pro-Line, and it costs $19.95 plus $2.50 shipping and handling. Send that amount to Atari Customer Relations, PO Box 61657, Sunnyvale, CA 94088. Their phone number, if you have questions, is 408-754-2000.

Gerard F. Walter
Ozone Park, NY

A Call to Readers

This page is your stage, so stand up and say a few words. Extend praise, air grievances or offer hands-on advice and information.

Send your letters to Mail RUN, 80 Elm St., Peterborough, NH 03458. Each letter must include the writer's name and complete address. RUN *reserves the right to edit letters for style, clarity and space.* ■

Compiled by HAROLD R. BJORNSEN

Diablo

Classic Image (510 Rhode Island Ave., Cherry Hill, NJ 08002) introduces Diablo, a maze-like and arcade-style game for the C-64. It consists of 240 sections of movable track, two tracks on each of 120 movable panels and a ball. The object of the game is to arrange the convoluted track so as to keep an ever-advancing ball on a continuous course. After the ball has traversed a section of track, the track is removed. The game becomes a challenge as less and less track is available to guide the accelerating ball. The game requires strategic planning and decisive control. Available on disk for $29.95.

Check Reader Service number 400.

IRS Time Again

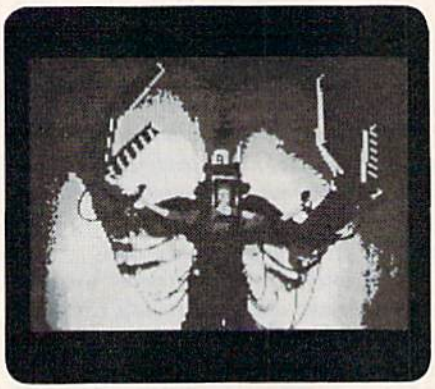
Master Software (6 Hillery Court, Randallstown, MD 21133) has released its 1986 version of Tax Master, an aid in the preparation of U.S. Federal Income Taxes for the C-64. Tax Master guides you through the preparation of Forms 1040 and 4562 and Schedules A–F. It figures your taxes automatically, performs all calculations and even transfers results from one tax form to another. You can also update information for W-2 forms and bank interest statements.

A file-coding system lets you store data for many taxpayers on one disk. More than one Schedule (C, E and F) and Form 4562 can be prepared for any taxpayer in case more than one business or farm exists. Tax Master prints out the data from all forms. Available on disk for $30, with an instruction manual and a coupon good for a discount on the 1987 version when it becomes available.

Check Reader Service number 402.

"Get Them *Out* of There!"

Aliens: The Computer Game is based, of course, on the movie *Aliens*, one of last summer's big hits. As the heroine, you must do everything to save your life and the lives of your crew—from navigating the drop-ship and fending off waves of aliens to rescuing Newt and combating the Alien Queen. Aliens: The Computer Game is available on disk for the C-64 for $34.95 from Activision, Inc., 2350 Bayshore Parkway, Mountain View, CA 94043.



Aliens: The Computer Game, from Activision.

Check Reader Service number 401.

Fight or Flight

Spinnaker (One Kendall Square, Cambridge, MA 02139) has added two new games for the C-64 to its line of arcade-action software.

In Z-Pilot, you are at the controls of a futuristic, high-performance jet fighter that's equipped with state-of-the-art guidance systems.

In Strike Force: Cobra, your mission is to infiltrate a seemingly impenetrable enemy fortress; counter its complex defenses; and locate, attack and destroy the main computer complex. Each game is available on disk for $9.95.

Check Reader Service number 409.

Take Me Out to the Ballgame

SubLogic (713 Edgebrook Drive, Champaign, IL 61820) has released Stadium Disk for use with its Pure-Stat Baseball team-management package. Now you can play in any of 26 Major League stadiums. The package also includes an additional ten classic teams from the past. You can manage any of these teams or trade players from them when creating your own teams. Also included is information to improve your game, such as which stadiums favor hitters or pitchers and which result in typically low-scoring games due to wind and weather. The Stadium Disk is available for the C-64 for $19.95.

Check Reader Service number 406.

For Children and The Visually Impaired

Kidsview is a software package that doubles the size of screen characters to make them easily visible to young children and the visually impaired. It

Software Discounters of America

S.D. of A.

For Orders Only—1-800-225-7638
PA Orders—1-800-223-7784
Customer Service 412-361-5291

- Free shipping on orders over $100 in continental USA
- No surcharge for VISA/MasterCard
- Your card is not charged until we ship

ABACUS BOOKS
C128 Basic 7.0 Internals
C128 Internals CALL
C128 Peeks & Pokes FOR
C128 Tricks & Tips PRICES
CPM 128 User's Guide
1571 Internals
GEOS—Inside & Out
ABACUS SOFTWARE
Assembler Monitor (D) $25
Basic (D) .$25
Basic 128 .$39
Cad Pak (D) .$25
Cad Pak 128 .$39
Chart Pak 128 .$25
Cobol (D) .$25
Cobol 128 .$39
Forth (D) .$25
Personal Portfolio Manager (D) .$25
Power Plan (D) .$25
Speed Term 128 .$25
Super C (D) .$39
Super C 128 .$39
Super Pascal (D) .$39
Super Pascal 128 .$39
ACCESS
Executive Leader Board Tourn. Disk .$14
L.B. Famous Course Disk .$14
Leader Board Golf (D) $25
Leader Board Tourn. Disk #1 .$14
Robotics Workshop .Call
Tenth Frame (D) .$25
Triple Pack: BH1, BH2, Raid Over Moscow (D) .$14
ACCOLADE
Ace of Aces (D) .$19
Dambusters (D) .$19
Fight Night (D) .$19
Football (D) .$19
Hardball (D) .$19
Killed Until Dead (D) .$19
PSI-5 Trading (D) .$19
ACTION SOFT
Thunder Chopper (D) $19
Up Periscope! (D) .$19
ACTIVISION
Aliens (D) .$23
Cross Country Road Race (D) .$19
Gamemaker Library Disks Sports .$14
Science Fiction .$14
Gamemaker (D) .$25
Greeting Card Maker (D) $23
Hacker 2 (D) .$23
Little Computer People (D) .$23
Music Studio (D) .$23
Portal (D) .$25
Shanghai (D) .$23
Tass Times (D) .$23
Transformers (D) .$23
ARTWORX
Beach Blanket Volleyball (D) .$9.88
Bridge 4.0 (D) .$16
Data Disk #1 Female .$14
Data Disk #2 Male .$14
Data Disk #3 Female .$14
Equestrian Show Jumper (D) .$9.88
Highland Games (D) .$9.88
Hole In One + 6 (D) $9.88
International Hockey (D) $16
Police Cadet (D) .$9.88
Strip Poker (D) .$21
Thai Boxing (D) .$9.88
AVALON HILL
Dr. Ruth (D) .$19
MacBeth (D) .$16
Super Sunday (D) .$21
SBS 1985 Team Disk .$14
SBS Champs Disk .$14
Spitfire '40 (D) .$23
Title Bout (D) .$19
Tournament Golf (D) .$19
AVANTAGE
Desert Fox (D) .$9.88
Deceptor (D) .$9.88
Spy vs. Spy 1 & 2 (D) $9.88
BATTERIES INCLUDED
Consultant (64 or 128) $36
Paperclip w/Spell (D) .$29
Paperclip II 128 .$49
BERKELEY SOFTWORKS
Geos 128 .Call
Geos 64 (D) .$39
*Geo-Calc (D) .$33
*Geo-Chart (D) .$25
*Geos Desk Pak 1 (D) $23
*Geos Desk Pak 2 (D) Call
*Geo-Dex (D) .$25
*Geo-File (D) .$33
*Geos Font Pak (D) .$19
**Geos add-on programs only!*
BRODERBUND
Bank St. Series .Call
Carmen Sandiego (D) $23
Karateka (D) .$19
Print Shop (D) .$26
P.S. Companion (D) .$23
P.S. Graphics Library #1, #2, or #3 .$16 Ea.
P.S. Graphics Library Holiday Edition .$16
Toy Shop (D) .$39
CBS
Body In Focus (D) .$23
Mastering the SAT (D) $44
Math Mileage (D) .$6.88
Rich Scarry's Electronic Word Book (D) .$12
Sesame St. Pals Around Town (D) .$9
Success w/Algebra .Call
Success w/Math .Call
Timebound (D) .$6.88
CDA
America Cooks Series: American (D) .$9.8
Theatre Europe (D) .$23
DATA EAST
Commando (D) .$23
Express Raider (D) .Call
Ikari Warriors (D) .$23
Karate Champ (D) .$23
Kung Fu Master (D) .$23
Tag Team Wrestling .$23
DAVIDSON
Algeblaster (D) .$33
Math Blaster (D) .$33
Speed Reader II (D) .$33
Spell It (D) .$33
Word Attack (D) .$33
ELECTRIC DREAMS
Rocky Horror Show (D) $19
Spindizzy (D) .$19
Titanic Recovery Mission (D) .$19
Zoids (D) .$19
ELECTRONIC ARTS
Software Classic Series:
Archon (D) .$9.88
Heart of Africa (D) .$9.88
Mail Order Monsters (D) .$9.88
M.U.L.E. (D) .$9.88
Music Const. Set (D) $9.88
One-on-One (D) .$9.88
Pinball Const. Set (D) $9.88
Racing Dest. Set (D) $9.88
Seven Cities Gold (D) .$9.88
Super Boulder Dash (D) .$9.88
Touchdown Football (D) .$9.88
ELECTRONIC ARTS
Adv. Const. Set (D) .$26
America's Cup Sailing (D) .$23
Amnesia (D) .$26
Archon 2: Adept (D) .$23
Arctic Fox (D) .$23
Balakon Raider (D) .$23
Bard's Tale 1 (D) .$26
Bard's Tale 2: The Destiny Knight (D) .$26
Battlefront (D) .$26
Chessmaster 2000 (D) $26
Lords of Conquest (D) .$23
Make Your Own Murder Party (D) .$23
Marble Madness (D) .$23
Movie Maker (D) .$23
Scrabble (D) .$23
Skyfox (D) .$23
Star Fleet I (D) .$26
Timothy Leary's Mind Mirror (D) .$23
Ultimate Wizard (D) .$19
EPYX
Barbie (D) .$9
Champ. Wrestling (D) .$23
Destroyer (D) .$23
Fast Load (R) .$23
Gateway to Aspshal (D) .$9
Impossible Mission (D) .$9
Jumpman (D) .$9
Movie Monster (D) .$23
Multiplan 128 .$33
P.S. Graphics Scrapbook 1: Sports (D) .$16
P.S. Graphics Scrapbook 2: Off the Wall (D) .$16
Summer Games 2 (D) $23
Super Cycle (D) .$23
Winter Games (D) .$23
World Championship Karate (D) .$17.95
World Games (D) .$23
FIREBIRD
Elite (D) .$19
Starglider (D) .$25
The Pawn (D) .$25
Tracker (D) .$25
FISHER PRICE
Alpha Build (R) .$6.88
Dance Fantasy (R) .$6.88
Hop Along Counting (R) .$6.88
Linking Logic (R) .$6.88
Memory Manor (R) .$6.88
Sea Speller (R) .$6.88
**Buy 3, get 1 free!*
GAMESTAR
Championship Baseball '86 .$23
Champ. Basketball (D) .$23
Star Rank Boxing (D) .$19
GFL Championship Football (D) .$23
On-Court Tennis (D) .$19
HES
Microsoft Multiplan (D) $19
Project Space Station (D) .$19
HI-TECH EXPRESSIONS
Card Ware (D) .$6.88
Heart Ware (D) .$6.88
Party Ware (D) .$9.88
INFOCOM
A Mind Forever Voyaging 128 .$23
Ballyhoo (D) .$25
Enchanter (D) .$23
Hitchhiker's Guide to the Galaxy (D) .$23
Hollywood Hijinx (D) .$25
Leather Goddesses .$23
Moonmist (D) .$23
Suspect (D) .$25
Trinity 128 .$25
Wishbringer (D) .$23
Zork 1 (D) .$23
Zork 2 or 3 (D) .$25
KONAMI
Yie Ar Kung Fu/ Rush 'N Attack (D) $19
MASTERTRONIC
Action Biker (D) .$6.88
Bounder (D) .$6.88
Captain Zap (D) .$6.88
Electra Glide (D) .$6.88
Infinity Machine (R) .$12
5-A-Side Soccer (D) $6.88
Knight Games (D) .$6.88
Last V-8 (D) .$6.88
Magnum Joystick .$12
Master of Magic (D) $6.88
Ninja (D) .$6.88
Pro Golf (D) .$6.88
Shogun (D) .$6.88
Speed King (D) .$6.88
The Slugger (D) .$6.88
Vegas Poker & Jackpot (D) .$6.88
MICROLEAGUE
Baseball (D) .$25
Box Score Stats (D) .$16
General Manager (D) .$25
1985 Team Data Disk $14
1986 Team Data Disk $14
WWF Wrestling (D) .$25
MICROPROSE
Acrojet (D) .$16
Conflict in Viet Nam (D) $25
Crusade in Europe (D) $25
Decision in Desert (D) $25
F-15 Strike Eagle (D) .$23
Gunship (D) .$23
Kennedy Approach (D) $16
Silent Service (D) .$23
Top Gunner (D) .$16
MINDSCAPE
Bank St. Music Writer (D) .$9.88
Bop & Wrestle (D) .$19
Crossword Magic (D) $33
Fairlight (D) .$19
Fist (D) .$19
High Roller (D) .$19
Indoor Sports (D) .$19
Infiltrator (D) .$19
Perfect College (D) .$14
Perfect Score SAT (D) $44
The American Challenge Sailing Simulation (D) $19
MISC
CSM 1541 Align Kit (D) .$29
Central Point- Copy 2 (D) .$23
Font Master 2 (D) .$33
Font Master 128 .$39
Gato (D) .$19
Snapshot 64 (R) .$39
Superbase 64 (D) .$47
Superbase 128 (D) .$59
Superscript 64 (D) .$33
Superscript 128 .$47
ORIGIN
Autoduel (D) .$32
Moebius (D) .$26
Ogre (D) .$26
Ultima 3 (D) .$32
Ultima 4 (D) .$39
RELEVANT
Billboard Maker (D) .$25
Icon Factory (D) .$25
Photo Finish (D) .$19
SCARBOROUGH
Build A Book (D) .$16
Mastertype (D) .$25
SIMON & SCHUSTER
Chem. Lab (D) .$25
Great Int'l. Paper Airplane Const. (D) $19
Star Trek: Promethean Prophecy (D) .$19
Typing Tutor 3 (D) .$25
SPRINGBOARD
Certificate Maker (D) $33
C.M. Library Vol. 1 .$23
Newsroom (D) .$33
N.R. Clip Art Vol. 1 (D) $19
N.R. Clip Art Vol. 2 (D) $25
N.R. Clip Art Vol. 3 (D) $19
Print Shop Graphics Expander (D) .$23
SSI
Battle Group (D) .$37
Battle of Antietam (D) $33
Colonial Conquest (D) $25
Gemstone Healer (D) $19
Gettysburg (D) .$37
Kampfgruppe (D) .$37
Mech Brigade (D) .$37
NAM (D) .$25
Phantasie (D) .$25
Phantasie 2 (D) .$25
Rings of Zilfin (D) .$25
Roadwar 2000 (D) .$25
Shard of Spring (D) .$25
War Game Construction Set (D) .$19
Warship (D) .$39
Wizard's Crown (D) .$25
SOFTSYNC
Personal Accountant (D) $23
SUBLOGIC
Baseball (D) .$32
Flight Simulator 2 (D) .$32
F.S. Scenery Disks .Call
Football (D) .$26
Jet (D) .$26
TELARIUM
Amazon (D) .$9.88
Fahrenheit 451 (D) .$9.88
Dragon World (D) .$9.88
Rendezvous (D) .$9.88
THUNDER MOUNTAIN
Cyrus Chess (D) .$6.88
Maxi Golf (D) .$6.88
Mr. Pixel's Cartoon Kit (D) .$6.88
Rambo: First Blood Part II (D) .$6.88
The Eliminator (D) .$6.88
TIMEWORKS
Accts. Payable (D) .$39
Accts. Receivable (D) $39
Data Manager 2 (D) .$25
Data Manager 128 .$43
General Ledger (D) .$39
Inventory Mgmt (D) .$39
Partner 64 (R) .$39
Partner 128 (R) .$43
Swiftcalc/Sideways (D) $25
Swiftcalc/ Sideways 128 .$43
Swiftax '86 .$33
Sylvia Porter's Personal Fin. Planner (D) 64 .$33
Sylvia Porter's Personal Fin. Planner 128 .$43
Word Writer w/ Speller (D) .$33
Word Writer w/85000 Word Speller 128 .$43
UNISON WORLD
Art Gallery 1 (D) .$16
Art Gallery 2 (D) .$16
Print Master (D) .$23
VALUE TIME
Art Library 1 or 2 (D) $9.88
Calendars & Stationery (D) .$9.88
Greeting Cards (D) .$9.88
Signs & Banners (D) $9.88
WEEKLY READER
Stickybear Series:
ABC's (D) .$16
Math (D) .$16
Numbers (D) .$16
Opposites (D) .$16
Reading (D) .$16
Shapes (D) .$16
Spellgrabber (D) .$16
Typing (D) .$16
WINDHAM CLASSICS
Alice in Wonderland (D) .$6.88
Below the Root (D) .$6.88
Swiss Family Robinson (D) .$6.88
Treasure Island (D) .$6.88
Wizard of Oz (D) .$6.88
ACCESSORIES
Bonus SS, DD .$5.99 Bx
Bonus DS, DD .$6.99 Bx
Compuserve Starter Kit ($25 usage Credit) .$19
Disk Case (Holds 75) .$9
Disk Drive Cleaner .$9
Disk Notcher .$7
Dow Jones Starter Kit $9.88
Epyx 500XJ Joystick .$14
Wico Bat Handle .$17
Wico Boss .$12

P.O. BOX 111327—DEPT. RN—BLAWNOX, PA 15238

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately. Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! *Shipping: Continental U.S.A.*—Orders under $100 add $3; *free shipping on orders over $100. AK, HI, FPO, APO—add $5 on all orders. Canada & Puerto Rico—add $10 on all orders.* Sorry, no other International orders accepted! *PA residents add 6% sales tax on the total amount of order including shipping charges!* Prices subject to change without notice. *REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291 (1)* Status of order or back order *(2)* If any merchandise purchased within 60 days from S.D. of A. is defective, please call for a return authorization number. Defective merchandise will be replaced with the same merchandise only. NO CREDITS! After 60 days please refer to the manufacturers warranty included with the merchandise & return directly to the manufacturer. *Customer service will not accept collect calls or calls on S.D. OF A.'s 800# order lines! REGULAR HOURS: Mon.-Fri. 9AM-5:30 PM, Sat. 10AM-4PM Eastern Time.* Have you seen our on line catalog of 1000 software titles for Commodore, Atari, Apple, IBM and Amiga? It's on Compuserve Electronic Mall—just type GO SDA and shopping for software will never be the same again!

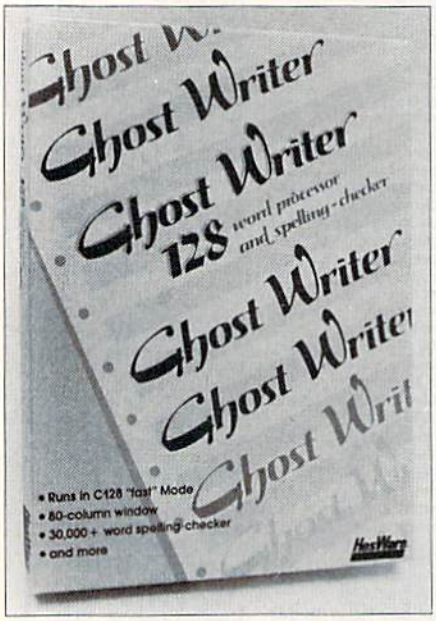
Circle 254 on Reader Service card.

operates in real time and doesn't change the basic operation of your computer. Kidsview is available on disk for the C-64 for $29.95. Kidsview Software, PO Box 98, Warner, NH 03278.

Check Reader Service number 407.

Who You Gonna Call?

GhostWriter 128, that's who. It's a word processor for the C-128 (in 40- and 80-column modes) that formats



HesWare's GhostWriter 128 has a 30,000-word spelling checker.

text to the screen automatically and lets you change margins, tabs, indents, numerical tabs and line spacing. Features include an expandable, 30,000-word spelling checker; move, copy, delete and insert functions; find and find/replace; file merging from other word processors; an address label option; and left- and right-margin justification. GhostWriter 128 is compatible with most letter-quality and dot-matrix printers (except RS-232C-interfaced printers) and comes with a 70-page manual. Available on disk for $39.95 from HesWare, 390 Swift Ave. #14, South San Francisco, CA 94080.

Check Reader Service number 404.

Fish School

Fish-Ed, a new educational program from Buchanan Software (160A North Fairview Ave., Suite 146, Goleta, CA 93117), features four learning games designed for students in kindergarten through sixth grade.

In Alphabet Practice, your child must place letters in alphabetical order. In Spelling, he or she can practice spelling with word lists from Fish-Ed's library, or you can create your own 20-word spelling lists.

Number Concepts teaches your child the quantitative meaning behind addition and subtraction. Math Practice gives your child practice in addition, subtraction, multiplication, division, fractions, decimals, negative numbers and chain problems from Fish-Ed's library. You can also create and save your own problem lists. Available on disk for the C-64 for $29.95.

Check Reader Service number 405.

Rise Through the Ranks

Gunship—The Attack Helicopter Simulation is now available for the C-64. Gunship not only simulates the skill and action of high-speed, low-level helicopter flight; it also simulates your career development as a helicopter pilot by tracking your record from early training through rank promotions and world missions and on to the possible award of a Congressional Medal of Honor.

Flying maneuvers are presented in 3-D graphics, and hi-tech information and weapons systems include lasers, video cameras, night viewers, radar warnings, jammers, on-board computers, missiles, rockets, flares and a 30mm cannon. An 84-page operations manual and a keyboard overlay are a standard part of the package. Available on disk for $34.95. MicroProse Software, 120 Lakefront Drive, Hunt Valley, MD 21030.

Check Reader Service number 413.

Notebooks, Quizzes and Swimming Pools

Three new programs for the C-128 have been released on disks for $19.95 each by Free Spirit Software (538 S. Edgewood, LaGrange, IL 60525). Programmer's Notebook is a high-speed data storage and retrieval system that stores up to 720 pages of computer information with the 1571 disk drive (500 pages with the 1541).

Mr. Quizzer helps teachers prepare quizzes on any subject (even trivia games) and includes options for multiple choice, vocabulary and general question/answer formats.

Swimming Pool Chemistry Database calculates the required chemical doses of assorted pool chemicals and automatically maintains test and treatment records.

Check Reader Service number 403.

ROMdisk

Epimetheus Corporation (PO Box 728108, Berkley, MI 48072) intro-

MicroProse's Gunship—The Attack Helicopter Simulation.

duces its 128K ROMdisk with Hyperboot for the C-64. Attached to the user port, you can create a library of up to 150 of your favorite programs. Hyperboot, an 8K cartridge, transfers program files from the 1541 disk drive to the ROMdisk, which then can load your programs at a rate of 63 disk blocks per second. The ROMdisk is erasable with ultraviolet light and can be reprogrammed thousands of times. The ROMdisk cartridge, along with Hyperboot, retails for $179.

Also available are two-way switches that allow both a modem and the ROMdisk to use the user port without manually switching the modem and ROMdisk ($39) and a three-foot ribbon wire extension cable to allow remote placement of the ROMdisk or modem ($24.95).

Check Reader Service number 408.

Memory Cartridge

Scinort Micro (PO Box 17546, Austin, TX 78760) has a nonvolatile memory cartridge for the C-64 that eliminates manual loading of often-used utilities, function key settings and screen configurations on power-up. The loader program can set your Basic or machine language program to autoload or autoload and run on power-up or by a SYS jump to the cartridge. Batteries (included with the cartridge) preserve your data for more than a year, and a write-protect switch guards against accidental write access. The Scinort Micro memory cartridge costs $24.95.

Check Reader Service number 414.

Basic Training

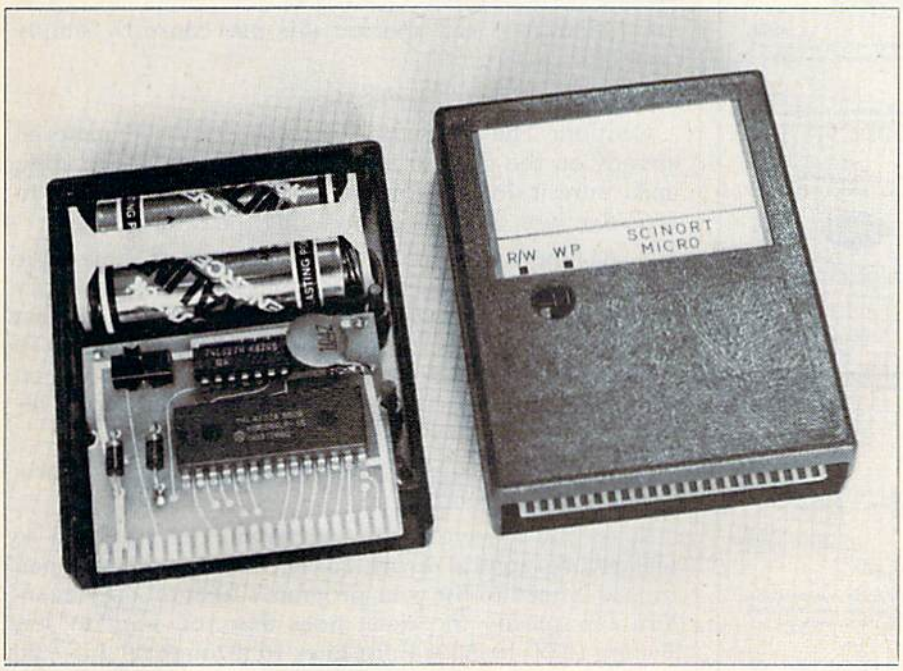
C-128 Basic Training Guide, a 295-page volume from Abacus Software (PO Box 7219, Grand Rapids, MI 49510), is for programmers who want to learn the C-128's Basic programming language. Topics covered are Programming in Basic, Extended Program Structures, Advanced Basic Applications, Principles of File Management, Music and Graphics, and Utilities. It sells for $16.95.

Check Reader Service number 412.

Teacher's Pet

Five learning programs for the C-64 have been released by Sunburst Communications (39 Washington Ave., Room FM, Pleasantville, NY 10570). Each package includes a teacher's guide, one data disk and a backup disk, and it retails for $59. Teachers might wish to get the ten-disk lab pack, with a teacher's guide for each package, for $177.

Memory Building Blocks (kindergarten to adult) lets students build visual and auditory memory skills by playing five concentration-type games.



The Memory Cartridge, from Scinort Micro.

In Iggy's Gnees (grades 1–4), students can develop their visual discrimination skills by solving problems at three levels of difficulty.

Code Quest (grade 4 to adult) sharpens students' thinking skills, including discrimination, classification and rule formation, by decoding clues and forming hypotheses on the identity of a "mystery" object.

Gears (grade 6 to adult) lets students experiment with gears while learning the problem-solving skills of prediction and analysis.

In Discover (grades 6–12), students observe alien life forms in order to provide them with the right foods at the right times and to set up barriers and pathways to promote or inhibit interaction among the creatures.

Check Reader Service number 411.

Image 3

Micro Development (PO Box 5872, Cleveland, OH 44101) introduces Image 3, a graphics program that lets you create three-dimensional images with your C-64. Image 3 can draw monoscopic and stereoscopic images that, when viewed with special 3-D glasses, appear to have depth and "float" behind the monitor screen. A "key" language converts simple up-down/right-left/tilt commands into 3-D vectors and coordinates.

Some features of Image 3 are changes in perspective, an auto-setup file, operator gauges to indicate image attitude and a proportional screen dump that prints out a hard copy of the image in three shades to highlight the height, width and depth. Available on disk for $59.95.

Check Reader Service number 410.

The Accountant

KFS Software (1301 Seminole Blvd., #153A, Largo, FL 33540) has released The Accountant, a bookkeeping package for the C-128 and 1571 disk drive. Features include financial statements, a general journal (standard debit/credit format), customer statements (generates letterheads or use your own), payroll record-keeping (weekly, monthly, quarterly and annually, and a checkwriting option) and preset file sizes to accommodate small business. The Accountant is available for $149.95.

Check Reader Service number 415. ■

ECHO SM

*Get beyond the hassle of endless parameters with the MOST ADVANCED disk copier available!
*Ask the others if their programs will copy Paperback Writer, Paperback Planner, Paperback Filer, and Gunslinger!
*ECHO includes:
A high-speed, ultra-sophisticated, whole-track nibbler, AND
An easy-to-install, GCR-descrambler, disk-drive RAM board.
*ECHO disk not copy protected — make unlimited backups!
*For your 1541-1571 version coming soon!
*Receive $10 trade-in on your Shadow!
*ECHO is only $49.95 complete!
*COMING SOON — Hack Attack, the ADVANCED disk-drive utility!
*Top Secret Stuff I & II TOGETHER — ONLY $9.95!
*Great Dealer Discounts — Call!

UNDERWARE SM

2242 SE 110th Avenue
Portland, OR 97216
Orders ONLY - (503) 254-5317 9am-5pm PST
Tech Info - (503) 254-6239 2pm-5pm PST
Allow 2 weeks for personal checks
Add 3% for Visa/MasterCard orders
Add $4.00 for shipping and handling

Circle 69 on Reader Service card.

PROF JONES
SUMMER/FALL 1987
ORDER LINE (208) 342-6939
THOROUGHBRED
GREYHOUND
HARNESS
LOTTERY/LOTTO
FOOTBALL
BASKETBALL
OFFICE HOURS
M-F 8 AM - 5 PM
SAT 9 AM - 1 PM
(Mountain Standard Time)
FREE CATALOG
1940 W. STATE
BOISE, IDAHO 83702
VISA
AMEX

PROFESSIONAL HANDICAPPING SYSTEMS

PROFESSIONAL SERIES ™
PROFESSIONAL HANDICAPPING TOOLS from PROF. JONES

The New PROFESSIONAL SERIES™ "Software for the Serious Handicapper"
Our all new Professional Series™ represents the most advanced software available for handicapping Thoroughbred, Greyhound, and Harness racing.

- Analysis Module™ $249.95
The most complete and comprehensive bet analysis package available. This module is fast, powerful and easy to use. Full 50 tracks/kennels/etc. Analyzes race variables and recommends best bet strategies.
- Multiple Regression Module™ $149.95
Complete control over all program variables. Regresses out factors relating to winning animals and then automatically re-calculates the weighting formula as successive races are analyzed to derive the most precise formula possible!
- Database Management Module™ $149.95
Automatic storage of last ten races of all animals for inclusion into current race analysis. Higher win percentages due to more information. ($99.95 if purchased with Multiple Regression Module™).

Other specialized handicapping programs:

LOTTERY:
Advanced statistical analysis programs with proven number selection systems like R. Hard's 6-Digit Permutation, Dimitrov, and others!
Statistical Lottery Analysis™ $99.95
Enhanced Lottery/Lotto Analysis™ $129.95
Professional Lottery Analysis™ $149.95

FOOTBALL:
Complete football statistical prognosis of game scores, points spread, best bet, etc. Win/loss power ratings, previous four game analysis, multiple prediction results, and more!
Football Predictor™ $99.95
Football Addition™ $149.95
Professional Series Football™ $199.95
Bookie Buster™ Football Analysis $149.95

BASKETBALL:
Predict game results based on team strength ratings, past games stats analysis, etc. Evaluates avg. points scored, avg. points given up, wins/losses, point spreads, wild cards, & more!
NBA Basketball Analysis™ $99.95
Basketball Addition™ $149.95

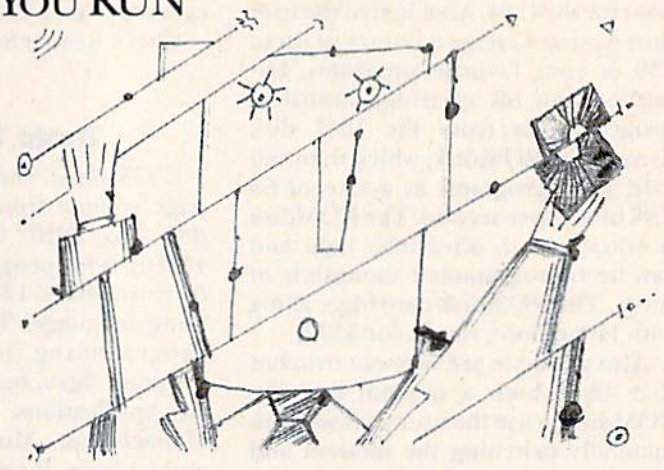
And many more programs available, call for a copy of our catalog!

Handicapper's Bulletin Board now available. The Prof's NFL & NBA weekly picks! Call for hrs. & Ph. #. / Master Handicapper™ VHS training tapes available. Learn handicapping faster and easier! / Portable PC's w/built-in handicapping software available. Call for more information.

Terms: Free shipping all software. Add $6.00 COD / $6.00 UPS Blue / $9.00 International delivery / ID residents add 5%. Allow 3 weeks when paid by personal check. Prices above are for cash or money order only. Add 3% for Visa, MasterCharge, and AMEX. Prices subject to change.

Circle 74 on Reader Service card.

LEARN TO WALK BEFORE YOU RUN



We receive many letters from new Commodore owners who want to learn the first steps in using their computers. For these first-time users, we present the following step-by-step list of things that all beginners should be aware of as they start typing in programs.

1. Before you can use a fresh disk, you have to format it. First turn on your disk drive, then insert the disk, close the latch and type:

```
OPEN15,8,15 <Press Return>
PRINT#15,"N0:NAME,##" <Press Return>
```

The ## is a two-character identification number that can be any combination of letters and/or digits. "NAME" can be any title for your disk that you choose, but it must not exceed 16 characters. Wait for a few minutes while the disk spins inside the drive, being formatted. When the disk stops spinning, type:

```
CLOSE15 <Press Return>
```

C-128 owners can shorten this procedure by simply typing:

```
HEADER "NAME,##" <Press Return>
```

Caution: The formatting process erases all material already on the disk, so if you're formatting a used disk, make sure it doesn't contain any programs you want to save. See item 7, below, on reading the disk directory.

2. As a beginner, you should start entering short Basic programs. Avoid machine language listings and very lengthy Basic programs until you get the hang of what you're doing. We have a checksum program (Perfect Typist) which actually proofreads your typing and tells you when you make a mistake. You should type in Perfect Typist before you enter any programs. See directions below.

3. Remember to press the return key after each programming line you type in.

4. As you are typing in a program, you are likely to make typographical errors. To check what you have typed in, you'll need to list your program's lines on the screen. You can specify the exact lines that you want to see. Typing LIST 10-50 will list lines 10 through 50. LIST 20 will list only line 20. If you see an error in one of your

listed lines, you can fix it by using the INST/DEL key and retyping the incorrect section of the line. Always press the return key after you have fixed a line.

5. Be sure to save what you have typed in before turning off your computer. To save any partial or complete Basic program listing to your disk, type:

SAVE "NAME",8 <Press Return>

C-128 owners can press F5, type in the program name, and press the return key.

Note: As you save subsequent versions of the same program, you need to make a slight change in the program name each time. You might simply add version numbers to the end of the program name (PROGRAM.1, PROGRAM.2, etc.).

6. While working on a program, you may develop several versions before you're satisfied that you have it in final form. After you *do* achieve that final version, you might want to go back and erase the old, incomplete versions from your disk. Erasing unwanted programs is called scratching. (Be sure not to erase your final version!) To scratch a program, type:

OPEN15,8,15 <Press Return>
PRINT#15,"S0:prog.name" <Press Return and wait a few seconds>
CLOSE15 <Press Return>

7. After you have saved several programs to your disk, you will need to see their names so that you can load the one you want. To get the complete list (the disk directory) of all the program names on your disk, type:

LOAD "$",8 <Press Return>

Then type LIST to actually see the directory. C-128 owners simply press F3.

8. When you know what program you want to load into your computer, type:

LOAD "NAME",8 <Press Return>

C-128 owners can just press F2, type in the program name, and press the return key.

9. After you have loaded a program, type RUN to actually use the program.

How to Type Listings From *RUN*

To simplify your typing of *RUN*'s C-64 and C-128 program listings, we include checksum numbers. These numbers follow a REM statement at the end of each line (e.g., :REM*123). These checksum numbers necessitate your using *RUN*'s Perfect Typist programs, listed below. Use 64 Perfect Typist for C-64 programs and 128 Perfect Typist for 128 Mode programs on the C-128.

Type in 64 Perfect Typist (Listing 1) or 128 Perfect Typist (Listing 2) and save it to either tape or disk before running. When you want to type in a 64- or a 128-mode program, first load and run the appropriate Perfect Typist listing. Two SYS numbers will be displayed on your screen. Jot these down and keep them handy. They are

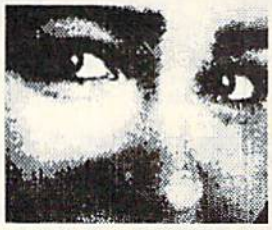
DIGITAL VISION

COMPUTEREYES™

VIDEO IMAGES ON YOUR COMPUTER!

Finally—an inexpensive way to capture real-world images on your computer's graphics display! COMPUTEREYES™ is an innovative slow-scan device that connects between any standard video source (video tape recorder, video camera, videodisk, etc.) and your computer. Under simple software control, a b/w image is acquired in less than six seconds. Unique multi-scan modes also provide realistic grey-scale images. Hundreds of applications!

Package includes interface module, complete easy-to-use software support on disk, owner's manual, and one year warranty all for $129.95 plus $4.00 S&H (USA).



Also available as a complete package including:
- COMPUTEREYES™
- Quality b/w video camera
- Connecting cable

ONLY $129.95

Available for:
- Apple II, II+, IIe and IIc
- Commodore 64/128
- Atari 800/800XL/130XE
- IBM PC and compatibles ($249.95—includes additional features)
- Atari ST ($249.95-full color digitizer)

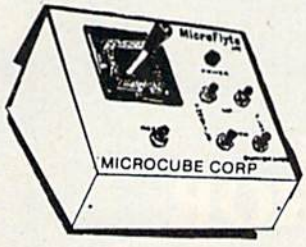
Demo disk available for $10.00 postpaid (refundable).

See your dealer or order direct. Mass. residents add 5% sales tax. Mastercard, Visa accepted. To order, or for more information, write or call:

DIGITAL VISION, INC.
66 Eastern Avenue
Dedham, MA 02026
(617) 329-5400

Circle 128 on Reader Service card.

The MicroFlyte JOYSTICK



Increase your flying enjoyment with the Micro Flyte Joystick—the ONLY fully proportional continuously variable joystick control for Flight Simulator II.

Only $59.95 (+ $4 shipping)

OUR USERS SAY IT ALL:

"...it transforms an excellent program into a truly realistic flight simulation system." B.A.C.E.

"FSII flies like the real thing with your joystick and software driver! Congratulations on bringing a superior product to the market." D.F.

"Simply put the MicroFlyte Joystick helps you 'fine tune' your flying." ANTIC

Driver Disk for F15 now available for $9.95.

NAME_____
ADDRESS_____
CITY/STATE/ZIP _____
CARD NO. & EXP. DATE_____
FSII is a trademark of Sublogic, F15 is a trademark of Microprose

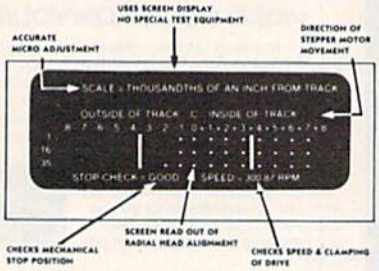
SEND TO: MicroCube Corp., P.O. Box 488, Leesburg, VA 22075
(703) 777-7157

Circle 38 on Reader Service card.

"I Saved Time & Money with Physical Exam"

I use a data base to keep records for our club. Last week I experienced read errors. Luckily I have a 1541 Physical Exam program. The alignment test confirmed what I had suspected, my drive was out of alignment. I am happy to report that I aligned my drive MYSELF. I avoided the wait for repair and paid a fraction of the cost.

1541 Physical Exam Sample Screen


USES SCREEN DISPLAY NO SPECIAL TEST EQUIPMENT
ACCURATE MICRO ADJUSTMENT
DIRECTION OF STEPPER MOTOR MOVEMENT
SCALE = THOUSANDTHS OF AN INCH FROM TRACK
OUTSIDE OF TRACK
INSIDE OF TRACK
STOP CHECK = GOOD
SPEED
SCREEN READ OUT OF RADIAL HEAD ALIGNMENT
CHECKS MECHANICAL STOP POSITION
CHECKS SPEED & CLAMPING OF DRIVE

Package includes: • True digital alignment disk with offset tracks. • Mechanical Stop Test • Speed Test • Illustrated manual with instructions for performing alignment, adjusting speed and stop position. • Hard copy mode to print test results for future reference.

Physical Exam is available for these drives: 1541, 1571, 8050, 8250, 4040, SFD 1001. **Please Specify Drive!**

$39.95 + SHIP ORDER TOLL FREE 10-6 MON-SAT

800-762-5645

Cardinal Software
14840 Build America Dr.
Woodbridge, VA 22191
Info: (703) 491-6494

Circle 192 on Reader Service card.

NEW VERSION 3.0 FOR C64 & C128 IN 128 MODE.

MIRROR

THE

THE MIRROR

MIRROR

DISK COPIER

$24.95

NO FINER OR MORE ADVANCED ARCHIVAL COPIER AVAILABLE AT ANY PRICE.
EASY TO USE. DOES NOT CAUSE DRIVE HEAD TO KNOCK.
COPIES UP TO 41 TRACKS.
PERIODIC UPDATE POLICY.
AUTOMATICALLY MAKES BACK-UP COPIES FROM VIRTUALLY ALL PROTECTED SOFTWARE.
NIBBLES, HALF TRACKS, COPIES EXTRA SECTORS AND EXTRA TRACKS.
REPRODUCES ALL DISK ERRORS AUTOMATICALLY.
FAST, COPIES FULL DISK IN AS LITTLE AS 4-7 MINS. EVEN COPIES ITSELF.

WE COPY MORE!
MASTERCARD, VISA, M.O. OR CHECK OK
+ $3 SHIPPING & HANDLING
C.O.D. OR FOREIGN ORDERS ADD $2
CALIF. ORDERS ADD 6% SALES TAX
— WRITE OR CALL —

Compumed

(408) 758-2436
P.O. BOX 6939
SALINAS, CA 93912
FOR COMMODORE 64 AND 1541 DRIVE
OR COMMODORE 128 AND 1571 DRIVE

Circle 251 on Reader Service card.

the SYS numbers that you type in for deactivating and reactivating the checksum program.

After Perfect Typist has been loaded and run, start typing in the program listing from *RUN* as you normally do. The only difference is that now, after you press the return key to log in each line, a 1-, 2- or 3-digit number will appear below the line on the left margin. This is the checksum number, ranging from 0 to 255.

If this number matches the checksum number printed in the listing after the :REM*, then you know you have typed that line correctly. Then you type the next program line right over the previous line's checksum value. If the checksum numbers do not agree, analyze your line on screen for any typographic errors or omissions. Make the needed changes and press the return key again to log in those changes. A new checksum number will appear in place of the old one. Compare this to the magazine's number and then proceed to the next line.

When you've finished typing in your program, disable the Perfect Typist by typing in the appropriate SYS number for either 64 or 128 mode, and press the return key. Now you can save your program as usual, to disk or tape. (Before you attempt to run your new program, turn your computer off and back on to completely clear out the Perfect Typist program.)

You may save an incomplete program any time and continue it later. You will have to reload and run the Perfect Typist program, then load the incompleted program that you were working on, list it, and continue where you left off.

The 128 Perfect Typist will work in either 40 or 80 columns. Also, it lets you use the C-128's automatic line-numbering. If Auto is on, the checksum will be printed below the line you just entered, and the C-128 will place the next line number below the checksum.

All listings in *RUN* have been translated so that the graphics and control characters are designated as understandable key combinations. When you see instructions inside curly brackets, such as {SHIFT L}, you should hold down the shift key and press the L key. What you see on your screen will look quite different from what is designated inside the brackets. Another example is {22 SPACEs}, which instructs you to press the space bar 22 times.

Listing 1. *64 Perfect Typist program.*

```
1 REM 64 PERFECT TYPIST
2 REM BY: JAMES E BORDEN
1Ø POKE56,PEEK(56)-1:POKE52,PEEK(56):CLR
2Ø PG=PEEK(56):ML=PG*256+6Ø
3Ø FORX=ML TO ML+154:READD:T=T+D:POKEX,D:NE
   XT
4Ø IFT<>16251 THEN PRINT"ERROR IN DATA...":
   END
6Ø POKEML+4,PG:POKE ML+1Ø,PG:POKE ML+16,PG
7Ø POKE ML+2Ø,PG:POKE ML+32,PG:POKE ML+38,P
   G
8Ø POKE ML+141,PG
89 PRINT"{SHFT CLR}{CRSR RT}**************
   **********************"
9Ø SYS ML:PRINT "{CRSR RT}** 64 PERFECT TYP
   IST IS NOW ACTIVE{2 SPACEs}**"
```

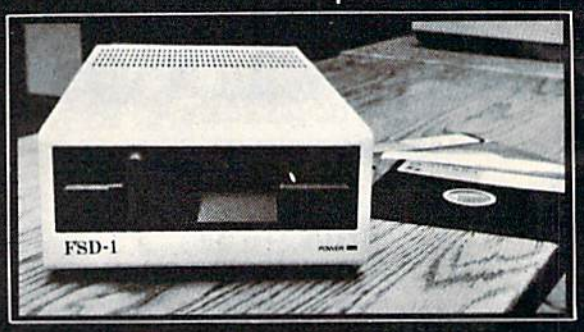
Listing 1 continued.

```
100 PRINT "{CRSR RT}** SYS"ML"=ON{5 SPACEs}
    SYS"ML+30"=OFF **"
101 PRINT"{CRSR RT}**********************
    **************":NEW
110 DATA 173,005,003,201,003,208,001,096
120 DATA 141,105,003,173,004,003,141,104
130 DATA 003,162,103,160,003,142,004,003
140 DATA 140,005,003,096,234,234,173,104
150 DATA 003,141,004,003,173,105,003,141
160 DATA 005,003,096,032,124,165,132,011
170 DATA 162,000,142,240,003,142,241,003
180 DATA 189,000,002,240,051,201,032,208
190 DATA 004,164,212,240,040,201,034,208
200 DATA 008,072,165,212,073,001,133,212
210 DATA 104,072,238,241,003,173,241,003
220 DATA 041,007,168,104,024,072,024,104
230 DATA 016,001,056,042,136,016,246,109
240 DATA 240,003,141,240,003,232,208,200
250 DATA 173,240,003,024,101,020,024,101
260 DATA 021,141,240,003,169,042,032,210
270 DATA 255,169,000,174,240,003,032,205
280 DATA 189,162,003,189,211,003,032,210
290 DATA 255,202,016,247,164,011,096,145
300 DATA 013,032,032
```

Listing 2. *128 Perfect Typist program.*

```
1 REM 40/80 COL C128 PERFECT TYPIST
2 REM BY: JAMES E BORDEN
10 FORX=5120TO5379:READD:T=T+D:POKEX,D
20 NEXT:IFT<>28312 THENPRINT"{2 CRSR DNs}ER
   ROR IN DATA...":END
25 A$="":IFPEEK(215) THENA$="{20 SPACEs}"
30 PRINT"{SHFT CLR}"A$" ******************
   ******************"
40 PRINTA$" ** 128 PERFECT TYPIST IS NOW AC
   TIVE **"
50 PRINTA$" **{2 SPACEs}SYS 5120=ON{7 SPACE
   s}SYS 5150=OFF{2 SPACEs}**"
60 PRINTA$" ******************************
   *******":SYS5120:NEW
70 DATA 173,5,3,201,20,208,1,96,141,45,20,1
   73,4,3,141,44,20,162,43,160,20
80 DATA 142,4,3,140,5,3,96,234,234,173,44,2
   0,141,4,3,173,45,20,141,5,3,96
90 DATA 32,13,67,140,255,19,162,0,142,252,1
   9,142,253,19,142,254,19,189,0,2
100 DATA 201,32,240,8,201,48,144,7,201,58,1
    76,3,232,208,238,189,0,2,240,54
110 DATA 201,32,208,5,172,254,19,240,42,201
    ,34,208,10,72,173,254,19,73,1
120 DATA 141,254,19,104,72,238,253,19,173,2
    53,19,41,7,168,104,24,72,24,104
130 DATA 16,1,56,42,136,16,246,109,252,19,1
    41,252,19,232,208,197,173,252
140 DATA 19,24,101,22,24,101,23,141,252,19,
    169,42,32,241,20,32,188,20,160
150 DATA 2,185,185,20,32,241,20,136,16,247,
    165,116,208,9,165,117,208,5,169
160 DATA 145,32,241,20,172,255,19,96,13,32,
    32,162,0,173,252,19,232,56,233
170 DATA 100,176,250,105,100,202,240,3,32,2
    32,20,201,10,176,5,205,252,19
180 DATA 240,15,162,0,232,56,233,10,16,250,
    24,105,10,202,32,232,20,170,72
190 DATA 138,9,48,32,241,20,104,96,170,173,
    0,255,72,169,0,141,0,255,138,32
200 DATA 210,255,104,141,0,255,96
```


Commodore Compatible and only. . . $149.00



FSD-1 5¼"Disk Drive
Directly replaces the Commodore 1541 disk drive.

The FSD-1 Disk Drive is a versatile and efficient disk drive built for the Commodore series of personal computers. This disk drive is fully compatible with the Commodore 64* computer and directly replaces the Commodore 1541 Disk Drive.

Special Features

- Runs all C-64 commercial software
- Ready to run right from the box
- Full 6 month warranty
- Heavy duty construction
- Vented metal chassis
- Built especially for C-64 users

Visa & MasterCard welcome. Credit card orders shipped in 24 hrs. Allow $12.00 shipping and handling. Send mail order with payment to:

To Order call toll free 1-800-356-5178

ECI

Emerald Component International
Dept. ST
541 Willamette Street
Eugene, OR 97401
Tel. 503-683-1154

COMMODORE 64 is a registered trademark of Commodore Electronics, Ltd.

Circle 156 on Reader Service card.

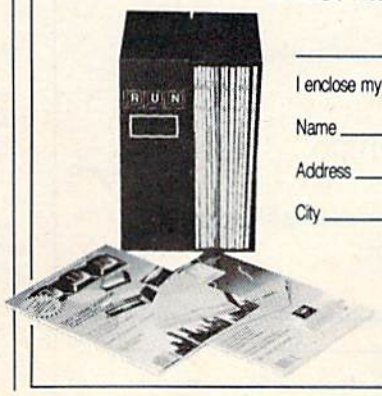
THE SMART WAY TO SAVE YOUR *RUN*

You'll find all your favorite issues of **RUN** in minutes—and in great condition—with smart-looking binders or file cases from Jesse Jones.

Sturdy, protective file cases make for easy access to each issue, while rugged binders allow magazines to lay flat for easy reference. Both hold 12 issues, are custom-designed in brown with gold spine lettering, and are **unconditionally guaranteed.**

Order today!
File Cases: $6.95 ea.; 3/$20; 6/$36.
Binders: $8.50 ea.; 3/$24.75; 6/$48.

YES! Please send me protection for my **RUN**:



_____ File Cases _____ Binders

I enclose my check or money order for $ _____.

Name _____

Address _____

City _____ State _____ Zip _____

US currency only. Outside US, add $2.50 per item for postage and handling. Please allow 4-6 weeks for delivery.

MAIL TO: Jesse Jones Box Corp., PO Box 5120, Dept. RUN, Philadelphia, PA 19141

MOVING?

SUBSCRIPTION PROBLEM?

Get help with your subscription by calling our new toll free number:

1-800-227-5782

between 9 a.m. and 5 p.m. EST, Monday–Friday.

If possible, please have your mailing label in front of you as well as your cancelled check or credit card statement if you are having problems with payment

If moving, please give both your old address and new address.

Attention Subscribers

We occasionally make our mailing list available to other companies or organizations with products or services which we feel might be of interest to you. If you prefer that your name be deleted from such a list, please fill out the coupon below or affix a copy of your mailing label and mail it to:

CW Communications/Peterborough
RUN
PO Box 954
Farmingdale, NY 11737

Please delete my name from mailing lists sent to other companies or organizations. RUN

Name _____

Address _____

City _____ State _____ Zip _____

ADULTS ONLY SOFTWARE for the Commodore 64/128

ALVA DATA Dept J4
28 Alva Street,
New Bedford, MA 02740
(check/MO, outside US add $6)

THE LOVEGAME Interactive fantasy game for two or more intimate players. Amusing and suggestive trivia quiz format with provocative "Scoring" system! $24.95 postpaid.
STUD'S CHALLENGE A man's text adventure romp...The object of this game is to SCORE, figuring out how to please various types of women, and what turns them off. It takes all kinds!! $21.95 postpaid.

DEADLOCK Software

Deluxe BBS Construction Kit V7.1

The BBS that puts you in control. Very user friendly, 100% programmable menus, 300/1200 Baud, multi-drive, comprehensive file transfers, user activity log, color graphics capable, message bases, story boards, plus all the features you would expect in a great BBS system.

Orders: DEADLOCK SOFTWARE
205 Boston Ave. Mays Landing, NJ 08330
Or call Orders Only: 1-800-334-0854 ext. 827
(609) 653-4330 - Demo BBS (24 hrs; 300/1200) Please, no personal checks

$59.95

WE HAVE THE SOLUTION

Our MARCH Disk of the Month is ready!
It contains an integrated Home Applications System, a Hurricaine Tracking program, a terrific "Shoot'Em Up" Game, & other great programs!
All for only $5.00! (Plus $1.00 for postage)
In addition to our MARCH Disk, and our many other high quality catagory disks, we are now offering the BIBLE on disk at a special reduced price. For more information about these disks, our other disks, our SEARCH service, our Disk of the Month Club, and our other services, write for our FREE Brochure or send $3.00 for our brand new up-to-date catalog.
PUBLIC DOMAIN SOLUTIONS INC.
Dept 22 • P.O. Box 832 • Talevast, FL 34270

ORIGINAL AND BEST SELLING
PLAY T.V.'S
"WHEEL OF FORTUNE" & "FAMILY FEUD"
GREAT FUN FOR ALL AGES! PROFESSIONALLY DONE MACHINE LANGUAGE. SEND CHECK OR MO TO: DAYLIGHT SOFTWARE 4747 SNOW DR. SAN JOSE, CA 95111 OR CALL 408-226-3374

$19.95 each OR $24.95 for BOTH!

WORD MASTER 128

If you are tired of hundred page manuals. This word processor is for you. After 2000 hours work and listening to hundreds of customers Word Master was born. Full Screen editing, Exclusive Tabs Screen Search & Replace, Block Copy & Move, boldface, Underlining, Subscript & Superscript Plus 54 other features. Perfect for kids, quick letters, term papers ect. Plus Spelling Checker with 32,000 word dictionary. This word processor was designed for home use. Give a new author a chance and be surprised.
GET IT NOW.!! ONLY 19.95 + 2.00 postage and handling. Make your checks or money orders payable to: **Philip Hughes, 11910 Throughbred #110, Houston, Texas 77065 1-713-955-9084**

FREE SOFTWARE

1000's of PROGRAMS available (including games, business, modem, utilities and application programs) from the **PUBLIC DOMAIN USERS GROUP** for the **C64, C128** (plus **CP/M PROGRAMS FOR THE C-128**), **IBM** and **CP/M** computers. **PDUG**, established in 1982, is one of the oldest and largest users group with over 10,000 members worldwide.
SPECIAL OFFER—Send $10 today and receive not only our 1 year membership, but also our new members' disk containing 21 great programs. Or for more info send a stamped addressed return envelope (specify computer) to:
PUBLIC DOMAIN USERS GROUP, PO Box 1442-N1, Orangepark, FL 32067

RUN CLASS ADS

COMMODORE 64

FINEST PUBLIC DOMAIN PROGRAMS
• ON DISK • MOST $1.50 • ON DISK •
YOU PICK THE PROGRAMS THAT **YOU** WANT!!!

FOR YOUR OWN LIST AND DESCRIPTION OF THESE PROGRAMS SEND JUST $1.00 AND A SASE TO:

JLH CO.
DEPT A
BOX 67021
TOPEKA, KS 66667

DOUBLE YOUR COMPUTER CHARACTER SIZE INSTANTLY!

KIDSVIEW generates DOUBLE-SIZE characters automatically and instantly with normal operation of your Commodore 64—run existing, or create imaginative new programs easily. For children, adults, schools, the visually impaired.

KIDSWORD is a DOUBLE-SIZE character word processor designed for children yet powerful enough for adults. For Commodore 64.

KIDSVIEW and KIDSWORD Disks $29.95 each or both for $49.95

VISA/MASTERCARD (603) 927-4428

YOUR ONE-STOP DISCOUNT SHOPPING HEADQUARTERS FOR GEOS AND ALL GEOS SOFTWARE

GALAXY GRAPHICS—$8 (IntelLogic)
64 SAVANT—$19* (IntelLogic)
YogaMaster—$22* (IntelLogic)
*Counts as two items
WRITER'S WORKSHOP—32
GEODEX—$25
GEOS 1.2—$38
GEOCALC—$32
GEOFILE—$32
GEOCHART—$25
DESK PACK—$22

GEOS PROGRAM MANUAL (Bantam Publ.)—$14

Above Discount Prices based on cash purchase of three or more items. For two items please add $3 for one item please add $5.

Add $4 H&S. VISA, MC rush order add $2. **CALL 1-800-672-2887.**

Or send certified check or money order (allow three weeks if personal check) to:
IntelLogic—Suite 840, 300 West 5th Street, Austin TX 78701. (TX res add 5%)

Learn
BASIC
Programming At Your Own Pace

Easy to follow step by step instructions will teach you every command necessary to write your own basic programs. After Just a few short sessions you will have the knowledge needed to create programs for such tasks **as word processing, bookkeeping,** and **stock analyzing.** Why buy someone else's program when you can write your own?

EduSoft
1635 WILLEY RD
MEMPHIS TN 38119

$39.95 Postpaid

MIDWEST COMPUTER CAMP

Robotics · Graphics · Lasers

Plus all the traditional outdoor activities including swimming, archery, hiking and more.
Combine fun with experience!

(317) 297-2700
9392 Lafayette Road, Unit D5, Indianapolis, IN 46278

SURVEYORS—BUILDERS!
LAND SURVEYOR C-128

Computes Right & Oblique Triangles.
Computes Horizontal & Vertical Curves.
STATIONING and PRINTOUT for both curves.
Computes Volumes in Cu Ft, Cu Yds & Gals.

R&R HISSA
9500 S.W. 51 Terr.
Miami, FL 33165

$20.00 Postpaid: FL Res. Add 5% Tax

WIN LOTTO MILLION$!!!

New! Lotto Picker™ Plus lets you store winning Lotto & pick 3/4 numbers & choose 1 of 3 statistical modes (unbiased, 'hot', or 'due') to select what might be your winning million $ numbers! All U.S. & Canadian games included. Never Obsolete! For Commodore 64 & 128 (no Amiga). $34.95 + 4.55 shipping and handling. **Save shipping charges, Order by Mail:**

GE RIDGE SERVICES, INC. 170 Broadway, Suite 201-R New York, N.Y. 10038 or Call **1-800-341-1950 ext 77** WRITE for FREE catalog. Inquiries/Dealers 1-718-317-1961

PrintMaster Graphics Converter Print Shop

Automatically convert **Print Master** graphics to **Print Shop** graphics • Or convert **Print Shop** graphics to **Print Master** graphics • Supports 1 or 2 disk drives 1541/1571 •$19.95 + S & H

ORDER TOLL FREE 10-6 MON - SAT
800-762-5645

Cardinal Software 14840 Build America Dr., Woodbridge, VA 22191
Info: 491-6494

Print Shop is a ™ of Broderbund Software. Print Master is a ™ of Unison World, Inc.

ARTIFICIAL INTELLIGENCE language LISP!

Lisp interpreter for C64 with 140 page manual, Source Code, Tutorial & Sample Programs. No prior knowledge of LISP is required.

• **$39.95** U.S Postpaid •
List Processing Software
Box 3422
Rapid City, SD 57709
303-594-6896

Authorized Commodore Service Center

C-64...$43.95	C-128...65.95
*1541 (align only) $25.95	*1571 (align only)...25.95
*1541 (Repair)...$45.95	*1571 (Repair)...45.95
SX-64.....$60.95	CBM Printers (call)

*Not including head stepper motors or spindle motor

We also service Epson, Star, NEC, IBM, Zenith & COMPAQ
Discounts for Dealers and Schools

CALL 305-785-2490
Advanced Video Technology
1310 S. Dixie Hwy. Ste. 18W
Pompano Beach, FL 33060

COMMODORE CUSTOM CHIPS

COMMODORE AUTHORIZED SERVICE

"COMMODORE" DIAGNOSTICIAN"

Absolutely the lowest COMMODORE IC PRICES available anywhere for those that want to repair their own C-64/C-128 etc...CHECK US OUT: (2 or more mixed) others in stock..User Group Discounts Available.

WE ARE THE LARGEST AND OLDEST AUTHORIZED COMMODORE SERVICE CENTER in the U.S. We provide 24-48 HOUR turnaround on all repairs. Our 11 technicians are presently doing service for mass merchants, 700+ School Districts, 425 Commodore Dealers/Service Groups and the general public...Our prices are low (eg. $59.95/48.00) and we pick up your computer from you by FEDERAL EXPRESS AIR COURIER Service (anywhere in the U.S.) the same day you call.

NEW FROM AUSTRALIA, A complete Diagnostive/Cross Reference Guide for fixing Commodore Computers. $8.95 (Laminated).

KASARA MICROSYSTEMS, INC.
33 Murray Hill Drive, Spring Valley, NY, 10977
Toll Free 1-800•642•7634 (outside NY) 914•356•3131

---

commodore

plus/4 AND 128 SOFTWARE

$19.95 per disk

Games, (logic, puzzles, battle) educational, (math, geography, vocabulary), finance & statistics and trivia. Write for catalog.

Cardinal Software 14840 Build America Dr., Woodbridge, VA 22191 (703) 491-6494

April

COMING ATTRACTIONS

● **HARD DISK DRIVES**—Are you in the market for additional memory—and lots of it—for your Commodore? The lead article in our April issue will take a look at the growing selection of hard disk drives on the market. If you use your Commodore for applications that involve a lot of data, you won't want to miss this review.

● **TAX PROGRAMS**—We'll also offer a wrap-up of commercially available programs for the C-64 and C-128 to help you prepare your taxes by the April 15 deadline. Once you do your taxes on your Commodore, you'll never want to take the pencil-and-paper route again.

● **DATAFILE SPREADSHEET**—Many readers of *RUN* already know DFCalc through the Productivity Pak series. Everyone else will want to read the introduction to this Datafile-compatible program for producing spreadsheet-like reports.

● **ELECTRONIC EXPRESSIONS UPDATE**—Our introduction to the world of electronic publishing in last December's issue has generated a lot of response from readers interested in creating everything from banners to newsletters. In April, we'll continue our coverage of this technology with a review of more programs for combining text and graphics with your Commodore.

● **MORE SKIRMISHES IN THE SOFTWARE WAR**—Last January's issue, with its lead story on software protection and piracy, has come and gone, but the debate rages on. No other article in *RUN*'s history has generated such reader response. Next month, we'll publish several pages of letters we've received on this controversy.

LIST OF ADVERTISERS

ADVERTISING SALES:

East Coast Sales:

Steve Robbins; Ken Blakeman; Nancy Potter-Thompson (603)-924-7138 or (800)-441-4403;

West Coast Sales:

Giorgio Saluti (415)-328-3470

Reader Service		Page
8	Abacus Software	61
8	Abacus Software	59
49	Absolute Entertainment	43
108	Accolade	50, 51
260	Acorn of Indiana	99
188	Actionsoft	2, 3
5	Activision	41
79	Aprotek	69
111	Berkeley Softworks	19
134	Berkeley Softworks	22, 23
138	Berkeley Softworks	21
192	Cardinal Software	108
251	Compumed	108
64	CompuServe	29
274	Computer Friends	46
147	Computer Swap	83
300	Covox, Inc.	82
*	Crown Custom Covers	99
46	Digital Solutions	CIV
128	Digital Vision	107
3	Electronic Arts	9
3	Electronic Arts	35
156	Emerald Components	109
12	EPYX Inc.	CIII
85	EPYX Inc.	27
144	Free Spirit Software	92
*	GE Information Services	47
4	H & M Marketing	95
120	I.H.T. Software	84
35	InConTrol, Inc.	82
24	Inkwell Systems	94
197	Jacobsen Software Design	85
145	KFS Software, Inc.	83
126	Ketek	93
*	Lyco Computer	62, 63
28	Master Designer Software	1
38	Micro Cube Corp.	107
68	Micro Prose Software	37
207	MicroComputer Services	51
91	Microlog Corp.	87
98	Montgomery Grant	65
*	NRI Schools	71
60	Omnitronix	89
62	Prism Software	CII

Reader Service		Page
74	Prof. Jones	106
93	Professional Software	32
223	Pro-Tech-Tronics	52, 53
201	Pro-Tech-Tronics	55
15	Protecto Enterprizes	74, 75
220	Quinsept	98
	RUN	
	ReRUN Sub Ad	64
	ReRUN Back Issues Ad	48
	ReRUN Productivity Pak II	80
*	S & S Wholesalers	67
90	Skyles Electric Works	73
84	Softsync	11
254	Software Disc. of America	103
26	SubLogic Corp.	57
78	SubLogic Corp	45
155	Tenex Computer Express	77
146	Timeworks, Inc.	39
209	Tussey Computer Products	15, 16, 17
132	Ultrabyte	60
69	Underware	106
76	Uptime	7
187	Utilities, Unltd.	68
80	VG Data Shack	6
*	Value-Soft	81
165	Wallstreet Corp.	85
86	Wenger Corp.	25
97	White House Computers	91
96	Xetec, Inc.	14
114	Xetec, Inc.	14

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

For further information from our advertisers, circle the corresponding Reader Service number on the Reader Service card.
*This advertiser prefers to be contacted directly.

RUN ALERT

As a service to its readers, *RUN* will periodically publish the names of companies who are having difficulties meeting their customer obligations or who have gone out of business. Readers are advised to contact *RUN* before dealing with companies that may from time to time be listed. If you have any questions or concerns about advertisers in *RUN*, please contact:

Cynde Garrett, Customer Service
***RUN* Magazine**
80 Elm St.
Peterborough, NH 03458
603-924-9471

TEST DIVE ONE FOR YOURSELF.

In their day, they ruled over three quarters of the earth's surface.

During WWII, they viciously brought Britain to her knees. And Japan to the ground.

These were the silent killers: Tench. Gato. U-Boat.

And now, they return. In this, the most realistic, all-encompassing simulation ever created for the personal computer.

You will command one of six types of American subs or German Kriegsmarine U-Boats, during any year from 1939 to 1945. You'll perform one of over 60 missions. Or you'll engage in the most difficult task of all: To make it through *the entire war.*

Each vessel is completely unique and painstakingly authentic, so you'll have a lot to learn: Navigation. Weather. Radar.

And the contents of a vital target book, among other things.

Your arsenal will include deck and anti-aircraft guns. Torpedoes. And mines.

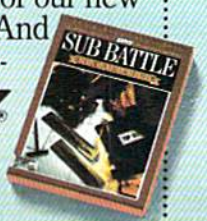
But even all that may not be enough.

Because besides the risk of bumping a depth charge or facing a killer Destroyer, you'll still have to contend with the gunfire of enemy aircraft.

No simulation has ever had the degree of authenticity, gut-wrenching action or historical accuracy of this one.

The first release of our new Masters Collection. And a challenge of unbelievable depth.

EPYX®



Apple II & compatibles, Apple IIGS, Atari ST, C64/128, IBM & compatibles, Macintosh.

TAKE OUR PREVIEW DISK FOR A SPIN. Drop this coupon in the mail with your check or money order, and we'll gladly send you to the South Pacific to have it out with an enemy fleet.

Mail to Sub Battle Preview, P.O. Box 8020, Redwood City, CA 94063.

	Quantity	Total
Apple II & compat. (128K)	_____	$1.50 ea. _____
Commodore 64/128	_____	$1.50 ea. _____
IBM PC & compat.	_____	$1.50 ea. _____
Atari ST	_____	$2.75 ea. _____
Macintosh	_____	$2.75 ea. _____
Apple II GS	_____	$2.75 ea. _____
Total Disks Ordered	_____	Total Enclosed _____

Name _____ Phone ( ) _____

Address _____ Age _____

City/State/Zip _____

Canadian orders please add 50¢ for additional postage.

Please allow 4 to 6 weeks for delivery. Offer expires 8/30/87 and is valid only in the continental U.S. and Canada. Void where prohibited. 50

The No. 1 battery. The ship's heart.

Sea guard radar stub.

Your ammo.

The 360° periscopes.

The sealed control room. Your HQ.

Independent generator & diesel engines.

Salt water tank, for trimming and compensating.

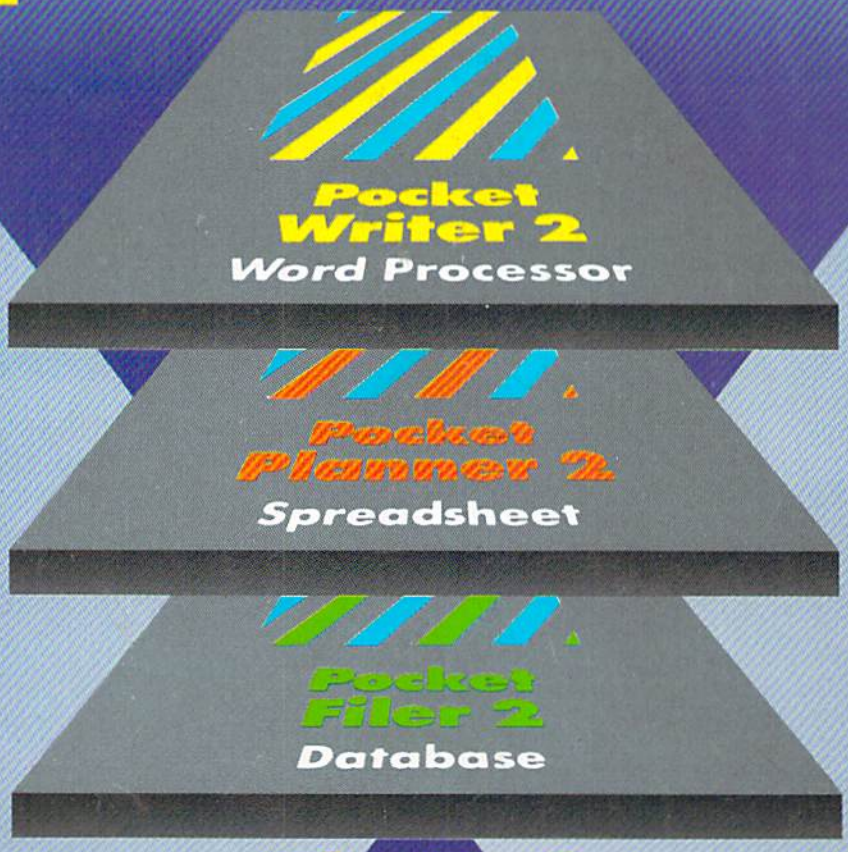
5" 25 cal. gun.

Officer's quarters.

Water purification.

Circle 12 on Reader Service card.

Super Solutions 2



The Best Just Got Better

We just did something only the best can do! We made our award winning* software for the Commodore™ 128 and 64 computers even better!

Introducing...Pocket Writer 2/word processor **Pocket Planner 2**/spreadsheet **Pocket Filer 2**/database

Our new Pocket 2 series offers features usually found only in much more sophisticated applications software. Features that include: compatability with the new GEOS operating system†, ability to work with the Commodore RAM expander to allow a RAM disk, mouse support with pull down menus, 1571 burst mode for faster file loading, increased support for two single disk drives, automatic configuration for screen color, format and printer selection†.

Sophisticated software, yes, and still easy to use. You can be up and running in under 30 minutes even if you haven't operated a computer before.

Now, when you upgrade your Commodore™ 64 to a 128, Pocket software helps make it a breeze. The new Pocket 2 software has both 128 and 64 applications on the same disk. So when you buy one you are actually buying two software packages. The cost only $59.95 (U.S.).

Serious Software That's Simple to Use

You can buy all three Pocket 2 applications, Pocket Writer 2, Pocket Planner 2 and Pocket Filer 2 in one convenient Superpak for the low price of only $99.95 (U.S.). A super way to discover all the integrated features of Pocket 2 software and save almost eighty dollars.

As a companion to Pocket Writer 2, a **Dictionary Disk** containing 32,000 words (expandable to 40,000) is available. The cost $14.95 (U.S.).

For those of you who have already discovered the many benefits of owning Pocket software; we offer all registered owners upgrade Pocket 2 software for only $19.95 (U.S.) plus 3.00 (U.S.) shipping and handling! Available only by writing to Digital Solutions Inc.

*Commodore's Micro-computers Magazine, independent reviewers, rated the original Pocket Writer 128/64 and Pocket Planner 128/64 software the "Annual Best of 1986" in the productivity category.

International Distributor Enquiries to:

Digital Solutions Inc.

2-30 Wertheim Court
Richmond Hill, Ontario
Canada L4B 1B9
Telephone (416) 731-8775
Telex 06-964501
Fax (416) 731-8915

Superpak: The Solution That Saves Money!

Economical; $179.85 (U.S.) worth of software for only **$99.95 (U.S.)**

Canadian Dealer Enquiries:
Ingram Canada Ltd.
1-416-738-1700

Mail orders:
Crystal Computer Inc.
in Michigan
1-517-224-7667
outside Michigan
1-800-245-7316

Commodore is a registered trademark of Commodore Business Machines Inc.
† Features available for Commodore 64™
©1986 Digital Solutions Inc

Circle 46 on Reader Service card.